

### ANTHONY'S

# Photographic Bulletin.

VOLUME XXVI.
1895.

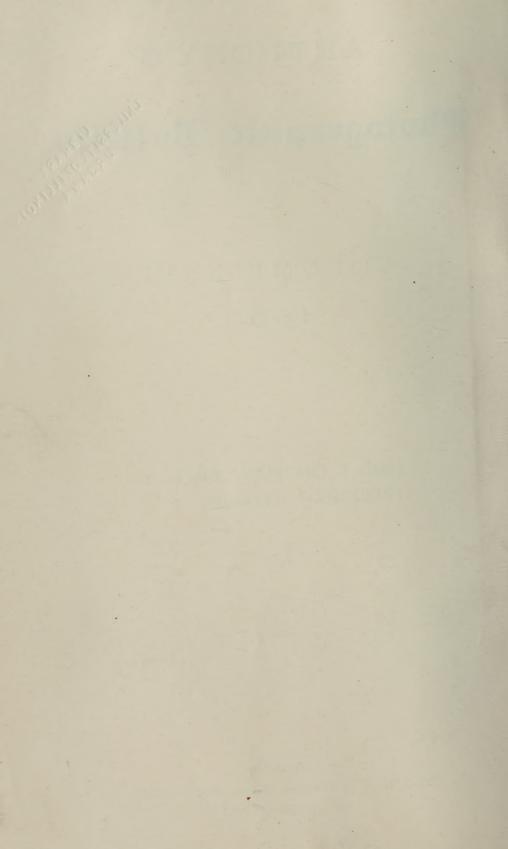
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## ANTHONY'S

# Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

Vol. XXVI.

JANUARY 1, 1895.

No. 1.

#### THE MANIPULATION OF LARGE PLATES.

ORTRAITURE on a large scale naturally has a charm for both subject and photographer, and the latter has of recent years experienced a steadily increasing demand for such large work. This demand is, of course, the legitimate result of the many improvements in materials and apparatus, and has, we believe, been largely augmented by the introduction of efficient systems of artificial lighting, by means of which uniform results are assured. At the recent exhibition of the Photographers' Association of America the majority of the prints were from large negatives, and the Special and Genre prizes were awarded to work made by the aid of the flash lamp. These two prize pictures have already been reproduced by us in half-tone. With the increase in the size of the plates used comes the necessity for the exercise of greater care in every part of the work. While, when working with small plates, it is often the rule to make provision for accident or carelessness by making duplicate exposures, this is a practice that hardly commends itself to the photographer when the plate is a considerable item of expense, as is the case with those used for large work. Indeed, even with small work, this two-plate system should be discountenanced, being unnecessary, and, in reality, inviting more or less carelessness.

The photographer who intends to be successful with large work must begin by providing himself with ample darkroom accommodation and a sufficiency of illumination. While it may be possible to turn out good negatives in cramped quarters, plenty of elbow-room is a decided advantage. Cleanliness must reign everywhere. Clean hands, clean dusting-brush, clean holders, clean lens, clean camera, clean darkrooms, clean graduates and clean trays are big factors in the production of clean work. The pitfalls, being known, may be avoided by the adoption of proper precautions. The photographer should eliminate every possible source of failure, and then only may he blame the plate.

This latter should, of course, be of a good brand; not necessarily the most expensive, but decidedly the one which will yield a good printing negative.

When only part of a box of large plates is used, care must be taken that the rest are properly screened from the light, and this is not accomplished without some little trouble, except with a few brands of plates, the manufacturers of which seem to understand the necessities of the darkroom man. The latest aspirant to



Light—Williams' Flash Machine, Plate—18 x 22 "Climax" Plate. Lens—20 x 22 Dallmeyer R. R.

public favor, the Climax plate, is particularly well packed, and if the boxes are restored to their original positions there is no danger whatever of any light reaching the plate, no matter in what position the box is placed. The outer covering for these plates is a box, which opens at one end. The inner boxes, which

fit one in the other, slide into this box, and thus cannot become separated. It is yet, we regret to say, far from a universal custom for the darkroom man to carefully dust all plates. With plates of large size this is a precaution that must not be neglected. It is, of course, of no use to dust the plates unless the camera and holders are clean. Large cameras accumulate much dust in a day, and the swinging around of such instruments to obtain a proper view of the subject may dislodge such dust, which may settle on the plate. Camera and holders should be well cleaned every morning. The plates are dusted with a camel's-hair brush, and this latter must, of course, be clean and free from stiff hairs. Dust on the plates gives rise to transparent spots of irregular shape, and a stiff brush will produce fine, transparent lines.

For large work, a camera capable of considerable extension is necessary, and a sliding bed is practically essential. The camera stand should have an extension top, so that the camera may at all times be supported at every point. The wheel for raising, lowering and tilting the top must be handy, and in the most modern camera stands one wheel suffices for all purposes. Regarding lenses, we have recently had occasion to make many large negatives, and have found a Dallmeyer rapid rectilinear to be all that could be desired.

So much for the camera, lens, stand, plate and darkroom. Regarding the source of illumination, we would repeat, that for all classes of work, and particularly for large work, artificial light is superior to daylight.

At a recent meeting of the photographers of New York and vicinity, held in the show rooms of our publishers, we made several large flashlight negatives, some of which are reproduced in this issue, and these in the simplest possible manner. Instead of manipulating a series of curtains and reflectors and subjecting the sitter to a prolonged communion with himself while we busied around, the whole operation of posing, lighting and exposure was done in a few seconds. The background, a side reflector and the flash-lamp were easily adjusted, and the exposure was in all cases absolutely instantaneous. Indeed, portraiture on a large scale is surprisingly easy when the flash-lamp is used. The same is the case with the electric light. tinic power of the light is known, and the operator may conduct his operations with mathematical accuracy. For ordinary work the electric light cannot be surpassed, and for large work the flash-lamp is without equal. of the skylight are numbered." This may seem a rash statement, but every week sees the installing of one or more electric light outfits in photographic studios.

For the development of large plates large trays are necessary, and hard rubber or papier-maché will be found in every way suitable. Plenty of developer must be used, and care must be taken that the plate is covered and that air bubbles are not formed. Round transparent spots are caused by air bubbles in the developer.

Fixing must be thorough, and the hypo must be clean. Yellow and brown stains and iridescence of the surface are caused by old hypo. The washing, of course, must be sufficient, and it is well to filter the tap water by tying a piece of muslin over the faucet. Regarding the printing but little need be said, but a pad between the paper and the back of the frame must always be used, and care must be taken when examining the print not to bring the printing frame down heavily on one end, or the heavy plate will shift in the frame.

#### HALATION.

HALATION may be defined as the spreading of the light beyond its proper boundary in the negative image on the plate, resulting in a blurring or indistinctness of the high lights. When ordinary plates are employed, halation is always more or less present. In interiors, the windows become blurred, white patches; in landscapes, the sky-line is indistinctly rendered, and the detail in the brightly illuminated portions has an out-of-focus look; in portraiture, the delicate white drapery is oftentimes but poorly reproduced. Halation may to a certain extent be counteracted during development, or partially remedied by the local application of a reducer, such as Farmer's reducing solution, a mixture of hyposulphite of soda and potassium ferricyanide. But these remedies never entirely obliterate the trouble and are at the best only makeshifts. They



Negative by J. T. Fryer on Cramer Non-Halation Plate. Exposure, 4 Minutes.

only partly hide the defects. Remedies of all kinds are only fallacies. Just so long as there are remedies, there will be things to be remedied. Prevention is the only cure for halation. Let all efforts, then, be in the direction of prevention.

The principal cause of halation is the reflection of actinic light from the back surface of the material used as a support for the film on to the under surface of the sensitive film, and therefore halation may be said to depend upon (1) the transparency of the film to actinic light, and (2) the reflecting power of the material used as a support for the film. Obviously, then, halation may be minimized (1) by increasing the opacity of the film, and (2) by reducing the reflecting power of the support. Both methods have been tried, with a certain amount of success, but both are open to objections which will preclude their general adoption. Taking the first, the preventing of the passage of the rays of

light through the film by increasing the opacity of the film. This has been tried in the multiple-coated plates, and while it is true that halation has been largely prevented, these plates have not, and will not, come into general use. The very opacity which minimizes the halation militates against a proper judging during the process of development. The action of the developer can only be followed intelligently when the plate can be looked through. With an opaque plate the element of chance is at once introduced. There are other objections to multiple-coated plates, but this, if we except the fact that the desired result may be obtained without them, is the principal one. These opaque plates were certainly steps in the right direction, in so far as they indicated the principle to be followed in preventing halation. It must be remembered, however, that it is only the actinic light which, by reflection, can influence the sensitive film.



Negative by J. T. Fryer on Cramer Non-Halation Plate. Exposure, 4 Minutes.

The second method for the diminishing of halation is the reduction of the reflecting power of the back surface of the supporting material, this latter usually being glass. This method also has received considerable attention, and backed plates are now an article of commerce; but here, again, we are confronted with the fact that, though the backing of plates has been under discussion for years, not one photographer in a hundred employs plates thus prepared in his daily work. Photographers recognize halation as an evil, but do not recognize either multiple-coated or backed plates as being preferable to halation. Backed plates are always more or less messy, and no little time is consumed in applying and removing the backing. Again, the use of backed plates means precautions against scratching this surface on the springs in the plate-holder. The professional photographer cannot find use for multiple-coated or backed plates, and

the amateur uses them in spite of their deficiencies as the only available protection against halation.

The ideal method demands a plate that shall not present any radical differences from the plates now in general use; a plate that shall be transparent and not involve the application and removal of a messy backing. As stated above, it is the reflection of actinic light from the back surface of the support that is chiefly responsible for halation. A transparent film containing an inert coloring material, soluble in the developer, which will arrest the passage of actinic rays, must prevent halation. Many experiments have been made in this direction, but only recently has the problem been successfully solved. A patent has recently been granted in this country for such a method, and our experiments made with such plates have demonstrated that it is possible with a transparent film and the ordinary glass support, without backing, to so diminish halation that its effect is not visible. These plates are not lacking in speed, and the various processes necessary for the production of a negative are the same as with the ordinary plates. The dye that is employed for the arresting of the actinic light is perfectly inert, and immediately dissolves in the developer. half-tone reproductions show two interiors, the plates used being prepared in the manner alluded to, namely, with an emulsion in which an inert dye, that will arrest all actinic light, is thoroughly incorporated. Plates so prepared are suitable for all classes of work. It must not be supposed that non-halation plates are of service only in interior work. They may be used with advantage on all occasions, and particularly at this time of the year. We recommend all our readers, professionals and amateurs, to give the new plates a trial.

#### ITEMS OF INTEREST.

In a recent editorial the prevention of halation by painting the over-exposed parts with a solution of potassium bromide was alluded to. A similar method may be employed for saving such clouds as may have been included in a picture. Commence development with a weak solution, and, when the clouds are fully visible, wash off the developer, and paint the sky with a brush charged with a strong solution of potassium bromide. After about one minute, rinse the plate under the tap, and proceed with development in the usual manner.

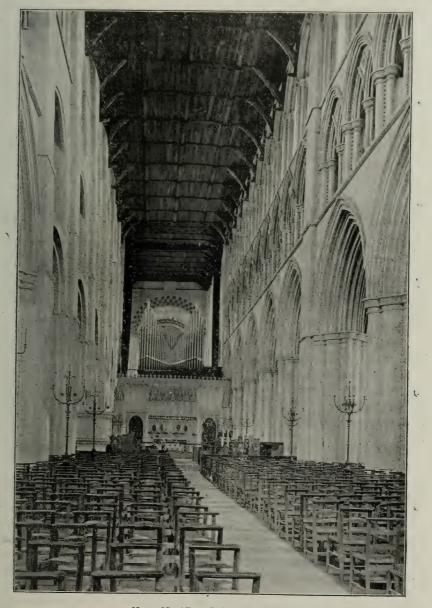
Do not trim the print to fit the mount; have the print right, and then select the mount.

ABRAHAM BOGARDUS writes: "To the amateur who is inclined to work at random, trusting to what he calls luck, I would say: You will never be a success, except at spoiling plates. Do as the exquisite did. When congratulated on the perfection of his neck rig, he said: 'I gave my whole mind to it.' Make fewer exposures, and to each give strict attention and care; make every plate produce a gem. Then your work will be a credit to yourself and a gratification to your critical friends. Noah's old adage applies well here, 'What is worth doing, is worth doing well.'"

Spot prints, after burnishing. The medium usually becomes darker under the burnisher, and is also liable to move.

Writing in "The International Annual," for 1895, on "What's in a Name?" the Rev. F. C. Lambert remarks: "Let the name or title be appropriate. \* \*, \* Avoid using titles or quotations that are too familiar. \* \* \* Let the title be the poetic rather than the prosaic view of the matter, the sentimental rather than the comic."

WE reproduce here in half-tone an exquisite interior, showing the nave of



Nave of St. Albans Cathedral, England.

St. Albans Cathedral, England. The engraving is made from a print kindly sent to us by Mr. W. Jerome Harrison, of Birmingham. We have seldom seen a better piece of work.

THE following method is recommended by Mr. Harold Serrell for carrying the camera on the bicycle: "The most convenient device consists of a clip secured to the saddle-post, and similar to the clip used with a child's seat. Two steel rods, adjustably secured in this clip, extend forward towards the handle bars, and bend over upwardly in a semi-circle, branching out into a platform of rectangular shape; to these are connected two straps for holding the camera, as it rests on the platform. This platform and rods are all in one piece, and the camera carries between the rider and the handle bars, steady and without vibration. It is a mistake to attempt to carry a camera upon a carrier secured to the handle bars, as it interferes with the steering and steadiness of the wheel, and here also a maximum of vibration is encountered."

WE learn that there is an excellent prospect of a speedy adjustment of the affairs of Queen & Company. Meanwhile, their large stock has been kept up, and orders are being filled as usual.

Mr. Rockwood, the well-known photographer, so many years at 17 Union Square, New York, has started a characteristic enterprise. He has reduced the price of cabinet photographs from \$8 to \$3 per dozen, and maintained the well-known artistic work of his establishment. He proposes to test very thoroughly the principle of the "nimble sixpence." This is the thirty-third year of Mr. Rockwood as a practical photographer, during which time he has scored 240,000 negatives; and yet he is not tired!

THREE new books deserve the attention of photographers. These are: "The Stereoscope and Stereoscopic Photography," by F. Drouin; "Snap-Shot Photography," by Martin J. Harding; and "The Half-Tone Process," by Julius Verfasser.

UNDER the heading "Beats the Other Man" we note in Printers' Ink that the record for continuous advertising belongs, up to date, to our publishers and to Wilson's Photographic Magazine, the firm of E. & H. T. Anthony & Company having advertised continuously in that journal since the first issue of the magazine, January 1, 1864. The past thirty years have seen many changes, but a record such as this speaks volumes for the value to the advertiser of the journal mentioned.

In Autolype Notes we find the following remarks regarding the drying and

storing of carbon tissue:

"For suspending the tissue in its wet condition, a few cords should be stretched from hooks or nails across the room, so that they can be easily removed when the tissue is taken down. The tissue may be attached to the cords by letter clips.

"Here is an alternative system of drying which is preferred by many. stead of suspending the wet tissue by clips, it is placed face upward on blotting boards, and the latter laid, as arches, across the cords. This system is, however, open to the theoretical objection that, in this position, dust is more liable to settle upon the tissue than when it is suspended vertically.

"The tissue being dried brings, us to the next consideration—its storage afterwards. If it is in small sizes, it will be found more convenient in use if it be kept flat. If pressure boxes, which are supplied specially for the purpose, are not at hand, the tissue can be stored equally as well in an ordinary printing frame, with a sheet of brown paper over the plate glass to protect it from light. If the tissue be sensitized in large pieces—the best way for professionals to work—it may be rolled up and kept in cylindrical tin cases, like those in which platinotype paper is supplied. However, it matters very little how the tissue is stored, so long as it is kept well from the air, and protected from moisture."

At a meeting of the Kilmarnock and Ayrshire Society an apparatus for taking portraits by artificial light was shown which seems to be somewhat of a novelty. At the side of the subject is a brass stand, adjustable to any height, and having arms adjustable to any height and angle. On these arms are supported several gas jets, behind each jet being a clockwork apparatus which feeds magnesium ribbon into the flame. The plate being ready for exposure, the operator squeezes a bulb and thus starts the clockwork. While the magnesium ribbon is burning, the plate is exposed; when the pressure on the bulb is released, the clockwork apparatus stops. As shown, the time of exposure was the same as with daylight.

WE have to congratulate our esteemed friends, Mr. and Mrs. Thomas C. Marceau, on the birth of a son, Thomas C. Marceau, Jr.

At a lecture before the Society of Amateur Photographers on December 13th, Professor Charles F. Chandler discussed the various photo-reproduction processes now in general use. These were classified under two heads; those in which the picture is formed of gelatine and a pigment, and those in which the picture is printed in ordinary printing ink. Under the former heading the Woodburytype, Woodburygravure and Stannotype processes were described, and under the latter the various methods adopted in printing from gelatine, stone, metallic relief plates and intaglio plates. The lecture was fully illustrated with plates and prints showing the various stages of each process.

Foggy negatives may be caused by over-exposure; white light entering camera or darkroom; too much light during development; decomposed developer; presence of hypo or silver nitrate in the developer; too warm developer; or too much carbonate of soda or potassium, without bromide.

H. W. Hales recommends that the developing tray be kept covered as much as possible during development. A pasteboard box cover, soaked with hot paraffin, makes an excellent cover for this purpose, answering also for a developing dish in an emergency.

By the time that this issue of the BULLETIN is in the hands of our readers our publishers will have received their shipment of "British Journal Almanacs" and "Year Books" for 1895. We can confidently recommend both books.

A NEW BOOK, "The Platinotype," by Capt. W. de W. Abney, will soon be issued by our publishers. Capt. Abney is as well known on this as on the other side of the Atlantic.

### Photography in London.

#### SILVER IN THE WHITES OF PRINTS.

THE contentions as to the causes of the frequent fading of prints upon albumenized paper are nearly as old as the use of albumenized paper. menized paper are nearly as old as the use of albumenized paper itself, but only in these latter days do we seem to have arrived at a period of sufficiently close experimental research upon the subject. On the 6th of December, Mr. A. Haddon, of the Royal Naval School of Science at Greenwich, read a paper about silver in the light portions of fixed prints upon albumenized paper before the London and Provincial Photographic Association. It included later researches upon the subject than those published by himself and Mr. F. B. Grundy in the autumn of 1893. Some similar pieces of albumenized paper had been sensitized on a bath of a 50-grain neutral solution of nitrate of silver, and dried in the dark, then cut into pieces measuring 5½ x 8½ inches. They were placed in 1½ pints of a 20 per cent. hypo bath, slightly alkaline, and at a temperature of 22.4 degrees Cent.; after being kept moving therein for fifteen minutes, they were transferred to running water and left therein for various times. Afterwards the silver left in each of them was reduced and extracted by chemical means and weighed, with the following results:

Ι.	Weight	of silver	in paper	unfixe	ed		 0.0734 g	ram.
2.	"	66		fixed	, but	not washed	 0,0086	6.6
3.	66	66	66	after		minutes' washing	0.0051	6.6
3· 4·	66	66	66	66	10	66	 0.0035	66
5.	"	66	66	66	15	66	 0.0037	66
5· 6.	66	66	66	66	25	66	 0.0037	6.6
	66	66	66	66	40	6.6	 0.0033	4.6
7· 8.	66	66	66	66	60	66	 	66
	66	66	c i	66	90	6.6		66
9.	"	66	66	66	120	66	 0,0040	6.6
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From these earlier experiments they concluded that, whatever the amount of washing, 5 per cent. of the silver in the high lights remains unremoved. The thickness of the film on the paper was not more than  $\frac{1}{4000000}$  inch, or one-fourteenth thinner than the finest gold leaf.

Mr. Haddon stated that he took an albumenized paper print four years old, apparently unaltered during the lapse of time, applied sulphuretted hydrogen to the whites, and they immediately changed to yellowish brown. Light and moisture are usually supposed to be the causes of decomposition in prints with lapse of time, and experiments he had tried upon the point indicated that light causes bleaching rather than darkening, so he concluded that light causes no darkening of completely fixed prints; moisture and heat, combined sometimes with the action of a little saline matter in the air, as in seaside towns, seem to promote the yellowing of prints on albumenized paper. He had not only extracted the silver by chemical means from the fixed whites of prints, but he had taken a piece of the fixed and washed white paper and printed an image upon it. This he did by first treating it with chlorine water for about five min-

utes, to turn any silver present into chloride of silver in a somewhat insensitive condition, then treating the paper with a 2 per cent. solution of nitrite of potassium as a chlorine absorber. By exposing this paper to sunshine under a negative for ten minutes he obtained an image of astonishing density, considering the conditions. This image he exhibited to the meeting. By further experiments, which he described, he found that the silver in the fixed prints is in the albumen and not in the fiber of its paper support. In large towns, sulphur compounds in the air are the chief cause of the yellowing of silver prints; their action is slow but sure; the supply of sulphur in some form is continuous, since it is present in small proportion in coal. Mr. Grundy and himself had tried about twenty different methods in the attempt to get the last trace of silver out of albumenized paper prints by chemical means, and had not yet succeeded; they had also tried varieties of fixing agents; the silver seemed to be present in a state of intimate combination with the albumen. Silver prints on albumen, then, can never last as long as platinum prints, although a proportion of them may possibly last as long as some of ourselves.

In the course of the discussion which followed the reading of this useful paper, Mr. Haddon said that his experiments with gelatino-chloride papers gave more favorable results; when they were properly fixed and washed, all the silver was extracted from the whites. He did not think the yellowing of albumenized prints to be due to the sulphur always present in albumen; indeed, gelatine also contains a trace of sulphur, but in smaller proportion than in albumen. It having been pointed out that the fading of the dark parts of the image was of more importance than the yellowing of the whites, Mr. Haddon replied that he had not investigated that subject; he did not know whether galvanic action might not be set up between the particles of gold and silver in the image, thus tending to the decomposition of the latter. He did not know whether the whites of papers prepared with fresh eggs would yellow with age to the same extent as the albumenized papers prepared at the present day.

One speaker remarked that he would bring some albumenized prints thirty-two years old to a future meeting; they showed no signs of fading. Mr. Haddon responded that no doubt they had been properly fixed in the first instance, and subsequently kept always in dry situations. The chairman, Mr. Beckett, expressed the opinion that imperfect fixation and inferior hypo are the two chief causes of the rapid deterioration of many prints upon albumenized paper.

#### A NEW FEAT IN PHOTOGRAPHIC OPTICS.

A LENS of novel construction was described in a paper read recently by Mr. Dennis Taylor before the Royal Photographic Society. He produced for examination two new triplets, differing essentially in the designs and curves from the triplets of the olden time. The one lens was intended for rapid portraiture, with a full aperture of f/3.7. The other was for landscape purposes, with a working aperture of f/5.65, giving a perfectly flat image up to the corners of a plate whose longer side is equal to four-fifths of the equivalent focal length. This combination consisted of two positive lenses of barosilicate crown glass, each lens with curves of unequal radii, and mounted with the more convex sides outwards; between them was a double-concave lens of the densest baryta crown glass. This combination contains no flint glass, and is purposely

not perfectly corrected for spherical aberration, in order that more depth of definition may be gained, but not enough spherical aberration is left to be visible to the eye. Several competing opticians took part in the discussion; nothing was elicited adverse to the new lenses, but it requires experience with them and public trial before any decisive verdict can be pronounced about their merits. Mr. Dallmeyer spoke of the tendency of some triplets to give flare, and Mr. Dennis Taylor responded that he had been fortunate in not having encountered any trace of flare over the work.

#### A GREAT PHOTOGRAPHIC EXHIBITION.

What promises to be the largest photographic exhibition ever seen in this country will take place next summer at the Imperial Institute, a palatial building in South Kensington, London, but from the prospectus it seems to be limited to exhibits from Great Britain and its colonies. The Governor-General of India, the Governor-General of Canada, and the governors of the various colonies have been requested to invite Indian and Colonial manufacturers to exhibit. The exhibition is to be divided into seven sections, namely: 1. The history of photography, accompanied by various illustrations relating to apparatus and processes. 2. Artistic photography, comprising a thoroughly representative exhibition of all schools. 3. Photography as an industry, including apparatus; also the preparation of dry plates and various processes shown in actual operation. 4. Photography in its application to industries, such as journalism, literature and ornamentation. 5. Applications of photography to the sciences. 6. Applications of photography to educational purposes. 7. Miscellaneous applications of photography, such as to architecture, archæology, engineering, legal purposes, military and naval purposes, surveying, cartography and chronography.

Those who wish for full information about the Imperial Institute and the permanent work it has in hand cannot do better than to read a lecture on the subject delivered by Sir Frederick Abel, at the Royal Institution, in the volume of the Proceedings of that Institution for the year 1887. The Prince of Wales, who takes a strong interest in the work of the Imperial Institute, occupied the

chair on the occasion.

#### A POETICAL PHOTOGRAPHIC SOCIETY.

A NOVELTY in the matter of photographic exhibition catalogues was put forth at the recent exhibition of the Leytonstone Camera Club, in the shape of some poetical verses about the exhibition, which verses form a preface to the catalogue. There is no name to the effusion, so whether it was written by one person or many is a point open to question. Perhaps like the epitaph to John Anderson, the Provost of Dundee, one line each was contributed by the members. Here is one of the verses of general application, rather than limited to the Leytonstone exhibition in particular:

From rippling stream, from wood, from sunny glade, From dreary moorland and from breezy wold; Where lurk the mysteries of light and shade; Where Autumn tints the mellowing scene with gold, What time its Summer garb begins to fade; Where Winter sits enthroned in icy hold, Limn'd by the Sun's unerring pen, they come—These pictures of our happy island home.

#### CONTENTIONS ABOUT ARTISTIC PHOTOGRAPHY.

CONTENTIONS as to what is and what is not artistic in photography wax hot and long on this side of the Atlantic, but they are old enough. The first to speak against the pictorial results of sharp focusing in photography was the artist, Sir W. J. Newton, in 1853, as recorded in the first volume of the Journal of the Photographic Society. Some persons nowadays argue against the employment of strong contrasts in photography, and this idea is of more ancient date still. happen to be the possessor of a copy of that old and scarce book, "A Popular Treatise on the Art of Photography," by Robert Hunt, Secretary of the Royal Cornwall Polytechnic Society: Glasgow, Richard Griffin & Co., 1841; it was issued from the press about eighteen months after the daguerreotype process was made public. In it, on page 92, is the following paragraph: "It has been said that photographic drawings fail in artistic effect. That they fail in producing those exaggerated effects which are found nowhere in Nature but on the canvas of some modern artists of eminence is most true. But Nature in her rudest forms is more beautiful than any artistic production; and in her choice arrangements, how infinitely beyond us. If the photographic art does nothing more than to teach our artists to subdue the violence of contrasts in which they have of late indulged, under a mistaken idea of producing a superior effect, it will have been of great service to all that relates to refined taste. Of all effects, the most untruthful is the modern artistic effect." Hunt's argument in short amounted to-improve your paintings by studying our photographs, and do not demand alterations in photographs to harmonize with your paintings. In the 1866 volume of The British Journal of Photography will be found much contention, not well indexed, about out-of-focus photographs. Rejlander, on page 509, remarks: "I am rather surprised that so much sharp writing has taken place about this movement. We ought all to be glad to have something to talk about, and to discuss in a friendly way." . This advice is as necessary to some of the disputants now as it was to their predecessors.

# PHOTO-MECHANICAL PRINTING WITH SALTS OF SILVER.

Last night, Tuesday, December 11th, at a meeting of the Royal Photographic Society, London, with Sir Henry Wood, President, in the chair, Mr. Leon Warnerke read a paper and gave a demonstration on the above subject, in which he set forth that what he had to say was little known, but at the same time not new; in fact he was about to demonstrate a process which came into the world before its time, before so much practical attention as at present was given to photo-mechanical printing. He used a tissue, consisting of paper coated with gelatino-chloride or bromide of silver emulsion, somewhat as in the carbon process, but in his own process no chromium salt was used. The image was developed with pyrogallol, and then treated as in the carbon process. It would do for letter press or copper plate printing equally well.

In printing the image on the tissue he produced grain in it in the usual way by means of a ruled-line screen, the presence of which increased the necessary exposure threefold; it contained one hundred and thirty-three lines to the inch.

In his process, spreading of the image does not take place when the negative is in perfect contact with the screen. Perfect cleanliness of the negative and screen is absolutely necessary, and a safety-edge must be used; it is impossible to do without it. As the source of light when printing on the tissue he used the magnesium flame, daylight being too variable, especially in the winter; the amount of light action is regulated by the length of magnesium burnt. Mr. Warnerke preferred copper as the metal for etching, especially as it is now so cheap. Taking the copper plate he first polishes it with snake stone, while placed upon a board covered with thick felt, to prevent the plate slipping; the surface is then cleaned with charcoal powder, and it is important to have proper charcoal which will bite the metal properly. Different kinds of charcoal are necessary for different metals, and are in the market; that which he was using seemed to him to be pine charcoal.

For developing the tissue he prepared two stock solutions:

SOLUTION A.	
Pyro	10
Citric acid	4
Water	4
	100
SOLUTION B.	
Strongest ammonia	12
Bromide of potassium	12
Water	4
Water	100

He then added ten carefully measured drops of A, and fourteen carefully measured drops of B—and was particular as to these proportions—in sufficient water to well cover the plate in the developing dish. The amount of water he stated to be of not much importance; variation in quantity varies the time of development. The tissue is moistened with water to make the developer run easily, then it is put into the developing bath. The image appears slowly because of the dilution of the developer; and sometimes when the exposure has not been quite long enough, the tissue is placed in a second and fresh bath of developer. This is done in all cases when the developer begins to discolor. If the tissue has been under the developer long, it should be transferred to a dish of water containing a trace of acetic acid to neutralize the ammonia, and to secure that the image shall not be insoluble on the surface. Then the tissue is applied to the bare copper plate as in the carbon process, after which slight pressure is given to the two in a copying press. Development may then be proceeded with at once, without, as in the carbon process, waiting a quarter of an hour.

Somewhat hot water is then poured on the back of the tissue, which is afterwards put in a bath of moderately warm water, say at 30 or 35 degrees Cent. When the soluble gelatine has been washed away, and the image left on the copper plate, alcohol diluted with an equal bulk of water is poured over the image to make the swollen grain thereof slowly shrink, after which strong alcohol is applied. Then the image must be left to get "thoroughly" dry; it is best to leave it all night to dry. Next day cover the back of the plate and all parts not to be etched with a suitable protecting varnish. Instead of using a ruled screen for getting grain, asphalt dust may be used, applied to the plate as in the photogravure processes. The plate is then heated on a stove sufficiently to cause the dust to cement itself to the metal. The reaching of the right point is best judged by the color of the surface. The plate is then etched in different baths

of perchloride of iron of different strengths, as in the processes just mentioned. The image is very deep and is easily inked; in fact at the meeting he used ordinary printing ink and a printer's ordinary lever hand press. He took no particular care about the inking, yet produced excellent proofs of a portrait of the President. This portrait printed by this process is, I believe, to be issued as a frontispiece to the next number of *The Journal of the Royal Photographic Society*. I omitted to state that after the etching the last traces of gelatine are removed from the plate by means of a solution of caustic alkali.

After the demonstration the President remarked that the manipulations had all been of a rough and ready description, considering the quality of the results obtained. There had been no overlaying. A process of the kind must be tried commercially before an opinion could be expressed as to its merits, but there seemed to be something in it.

The depth of the image, so as to give no trouble about the inking, seemed to me to be one of the most useful practical parts of the process as demonstrated.

W. H. HARRISON.

#### MOUNTING PRINTS.

ONE of the chief difficulties encountered by the amateur is the successful mounting of his prints. Few amateurs possess a burnisher, and prints cockle, and oftentimes it is difficult to get the print to lie evenly upon the mount. The following method for mounting collodion and gelatine silver prints will overcome many of the difficulties.

A number of ferrotype plates are cut down to the size of the mount generally used, and the prints, which should, of course, be trimmed, are immersed, each with a ferrotype plate, in water. The plate, and with it the print, is then raised, and the print adjusted until it lies in the center of the plate. The print is now squeegeed into contact with the plate and the surplus water removed with a piece of blotting paper. The other prints are treated in a similar manner, each being squeegeed to the center of a ferrotype plate of the same size as the mount to be used. Then, commencing with the one first removed from the water, the backs of the prints are carefully covered with Higgins' photo mounter, or with starch and flour paste, care being taken that the edges and corners are well covered with the mountant. A wide chisel-shaped brush should be used. The mount is then placed in position, and when several have been thus treated, they are placed under a press and perfect contact thus established. The thus mounted prints should be left to dry in a place where there is a good current of dry air. The plates will drop off, leaving the prints on the mounts. The pasting of the prints must be done carefully, care being taken that none of the mountant gets over the edges of the prints. No attempt must be made to remove the plates until the prints are thoroughly dry. The paste should be thick, containing as little water as possible.

Instead of ferrotype plates, polished hard rubber plates, about  $\frac{1}{64}$ th of an inch in thickness, may be used. A pleasing finish may also be imparted by using matt celluloid, a matt surface being obtained which is very effective. If this method be followed, the amateur, with a burnisher, will mount his pictures in a much more satisfactory manner than he has hitherto done.

#### LANTERN SLIDES, HOW TO MAKE AND COLOR THEM.\*

BY DWIGHT LATHROP ELMENDORF.

#### INTRODUCTION.

THE difficulties which meet the beginner at the start are many, and though some of them are real and are to be overcome only by care, patience and perseverance, yet most of the obstacles, which appear as mountains, soon disappear before the magic of common sense when applied under the guidance of practical experience.

The printed directions enclosed in each box of plates, while explicit enough for one well versed in the art, are Greek to the novice. The formulas puzzle some, the names of the chemicals, others; the chemical actions threaten distraction, while startling results, not at all in accordance with the directions,

cause a total collapse.

The purpose of this little work is to guide those who will follow its directions as Alpine climbers do the "fürer," step by step, trusting to the direction of their leader, who has often surmounted the difficulties which lie in the path leading to a perfect lantern slide.

There are no short cuts to real success, but by using the best appliances and methods we may speed over the path, enjoying each new difficulty as it appears,

because of the assurance born of past successes.

The making of a lantern slide at the present time is comparatively a very simple process, because every requisite is prepared for the worker, ready for immediate use, and no knowledge of chemistry per se is necessary. The result, be it good or bad, depends entirely upon the "personal equation."

If this uncertain quantity were known in each particular case, it would be an easy matter to prescribe the proper treatment; but as it varies even in one and the same person, the following directions will only apply to those who will

not insert or assert their own personality too much.

It is taken for granted that the beginner has at least one good negative. If at all in doubt, it is best for the novice to have some one who knows select a good one to be used as a standard.

Long experience has taught the author that the negative is the first stumbling

block.

Not many really know what a good negative for slide work is.

One which is rich in contrast, yielding a beautiful paper print, will make a good slide; but it cannot be compared with one which was slightly overtimed, and therefore a trifle flat for paper prints, but clear and full of detail, the chemical deposit or grain of the plate being exceedingly fine.

This quality of negative has yielded slides which have been magnified up to

30 feet square, and still the lights and shades were beautiful.

Lantern-slide plates in this country are  $3\frac{1}{4}$  inches wide and 4 inches long. Various manufacturers make plates of these dimensions, packed one dozen in a box, the latter being carefully sealed in order to keep all light from the plates. The plates manufactured for lantern slides are generally quite thin, and the glass is supposed to be especially selected; but, alas, there is plenty of room for improvement in this respect. The glass is coated with an emulsion of silver which is sensitive to actinic light.



From negative on 18x22 "Climax" Plate, Dallmeyer Wide Angle Lens.

MADE WITH WILLIAMS' FLASH MACHINE.

LIBRARY OF THE UNIVERSITY OF ILLINOIS By actinic light is meant any kind of light which causes a chemical change in the emulsion which can be detected or developed by using proper means. Throughout this work "actinic light" will mean the light used to photograph with, whether it is sunlight, gaslight, lamplight or candle-light.

A rainbow is composed of seven so-called colors. One edge of it is red, the other violet, with the five other colors lying between. By holding a common triangular glass prism in a sunbeam the same colors will be seen upon the ceiling or some part of the room. This beautiful band of seven visible colors is called the sun spectrum. Without entering into a physical discussion upon this subject, let it suffice to say that the glass prism decomposes the white (?) sunlight, or separates the various colors which together form white light, so that we can see seven of them. If a small sun spectrum be allowed to fall upon a piece of sensitized or silvered paper, such as is commonly used for printing photographs, it will be found that the portion in the violet end of the spectrum will turn brown rapidly, while that in the red will be hardly affected at all.

From this we discover that red light has little or no effect upon the silver compounds used in photography, whereas they are instantly changed in the blue and violet, and careful experiments prove that there are many rays beyond the violet, which the human eye cannot distinguish at all, that are especially energetic in their action upon certain chemicals. The green and yellow portions of the spectrum have some chemical effect, but not nearly as much as the blue and violet.

A piece of "ruby" glass (gold flashed, not copper), held in the sunlight, absorbs or stops almost all of the colors of which sunlight is composed, except the red, which passes through and gives us only red light, if the glass is properly flashed or coated with a film of red glass.

This glass is the best and safest medium used for producing red light, which has little or no chemical effect upon the sensitive dry plate; and it is therefore recommended for lamps which are used to furnish light for developing the ordinary plates prepared for general photography. These plates are generally extremely sensitive to violet, blue, green and yellow light in their order.

The plates made for lantern slides are not nearly so sensitive. To use a technical term, they are "slower"; therefore, ruby glass is not necessary, although it is the safest.

There is a glass called "dark amber," which serves admirably when backed with a piece of ground-glass. It yields a soft brownish yellow light, which does not try the eyes, and can be used without danger while working with the slow lantern-slide plates.

Sunlight or daylight is the most actinic light that we have, next to which is the electric arc light, which is now being substituted for daylight in many of the best studios. Next in order is that produced by burning magnesium.

These are all especially rich in blue and violet light or actinic rays.

The incandescent electric light, gas jets and kerosene oil lamps yield light which also contains these actinic rays, but in a lesser degree.

The difference may be detected by using the triangular prism. The spectrum of these is especially rich in the yellow portion, therefore the light from these sources is not so actinic, but contains enough of the actinic rays to act instantly upon the sensitive dry plate. In fact, an ordinary gas jet is the source of actinic light which the author uses for exposing the slides in order to produce the image upon the plate.

As "ruby" or "amber" glass stops the actinic rays of sunlight, they will also stop those in other sources of light and allow the red light (non-actinic) to pass through so that the operator can see what is going on without injury to the plate.

The beginner cannot be too carefully warned against the careless use of any

of these sources of light while unprotected sensitive plates are around.

During the various operations of removing the sensitive plates from the packing box, putting them in plate-holders or in printing frames, and in the manipulations of the plates during development and fixing, the plates should be carefully protected from any kind of actinic light, because they are very sensitive as compared with sensitized paper.

The reader must get the above warning firmly fixed in the mind, for it will

save much vexation and annoyance later.

The effect which actinic light has upon the sensitive plate is wholly invisible, unless the exposure is continued for a long period of time. For example, take a plate, put it in a camera and make an exposure for one second, then examine the plate carefully. No change will be visible. That a change has really taken place may be proved by pouring upon the plate a solution, containing certain chemicals, called the developer.

If a plate be exposed openly to daylight for several minutes or an hour, it will turn gray or chocolate color; no chemicals are necessary in this case to show that a change has taken place. Chemists have not yet explained this

wonderful action of light.

Fortunately the explanation is not essential so long as we can make use of this action, detect it, modify and extend it, until we obtain the object we desire, namely, the fixed result of the unknown chemical action of light, called the image on the plate. This is done by a process consisting of two steps; 1st, developing the invisible image until it is seen; 2d, fixing the image so that it will remain permanently upon the plate. Let us return to the experiments with the two plates exposed to actinic light. The first, which was exposed for a short time only, needed the aid of powerful chemical agents to bring out or develop the image.

The second needed none at all.

A logical conclusion may be drawn that, if, on one hand, a plate has been exposed an exceedingly short time to actinic light, the chemical agents applied to bring out or to develop the image must be powerful and be allowed to act upon the plate for a long time; on the other hand, a plate exposed for a longer period requires less powerful agents to produce the image. Going a step further, we may conclude that a perfect balance may be obtained between the exposure and the developing agents, so that the chemical action of the latter will develop the invisible image produced by the former to a proper degree, and no more or less.

When this balance is attained, perfection is the result.

While this is theoretically easy, it is not often attained in practice on account of the many variable quantities which enter into the calculation. For example, daylight varies at all times of the day and the year; therefore, it is a very uncertain element to deal with. Almost any source of steady, unvarying light is better for our purpose, such as a kerosene lamp, a gas jet or the electric light. The temperature of the room in which we work is another varying element,

and especially the temperature of the developing solution itself, which should be between 65 and 70 degrees Fahr. A slight variation in temperature will cause a complete change in the action of the developer. The developers, which will be described subsequently, must be warmed or cooled, as the case may be, until they are of the proper temperature, otherwise they cannot be depended upon at all.

These difficulties, when once pointed out, ought never to trouble a careful

worker.

The personal element now steps in, and this is the most unreliable quality of them all. It has a habit of exhibiting new phases every day, and often leads one to believe in the doctrine of the total depravity of things in general.

De gustibus non est disputandum, therefore, "agree to disagree," if necessary, but follow the directions closely.

(To be continued.)

#### CUM GRANO SALIS.

IT HAS been supposed that there was considerable truth in the old sayings, "We learn by experience," and "Experience is a hard teacher," but it would seem as if some were either unwilling or too blind to profit by the lesson. How many are there who have ever figured up the cost of experience? learn a certain process, and just as we get to a point where we begin to feel sure of success, in place of keeping on in that road we come across a certain signboard to the effect that there is a much easier way, and if you only use a certain article, advertised by Mr. John Doe, all troubles will vanish and the road be made less difficult. In the majority of cases we accept the promises of the sign-board rather than rely on our almost-perfected operations, leave all we have accomplished and follow the "Will o' the Wisp." In fact, we leave the plank that has carried us safely for years and try a road, to us unknown, and recommended by those whose profit lies in the number they succeed in turning into the new channel. Referring to many of the photographic chemicals on the market, and which are daily used by the large army of photographers, we will take the one known as pyro. Every user of this knows that a pure, reliable article has been furnished for years, and when any troubles have arisen, a thorough investigation has always shown that the fault is to be found anywhere than in the pyro. Now, with this experience before us, we see emblazoned on a sign-board that an article bearing the same name, but from another manufacturer, is far superior in every way to the "old reliable," and to prove it, a Professor (?) Old Man has used it in his developer and speaks loudly regarding its superiority. In what, pray, does this superiority exist? An article that is pure, and so guaranteed, cannot be improved upon. Others may succeed in producing one that is equally good, but I must confess that when I see such a statement as referred to, I am inclined to doubt its veracity, and the very words that are intended to dupe the unwary make me feel dubious about even giving the stuff a trial, although I have tried many such, merely to prove the humbuggery of the claims. plenty of experience, to say nothing of the innumerable packages and bottles of various fake goods that I have consigned to the ash barrel.

Why is the path of the demonstrator of plates, papers, etc., so thorny that he finds the introduction of a new brand very uphill work, unless at such reduced prices as to be a bait for the purchaser? Is it not because the photographers

have been so imposed upon by fakirs that they are wary of the new promises regarding the article being introduced, and accept all such cum grano salis? And do we not know, without being told, that behind all these puffs there must be a consideration in the way of pecuniary benefits. How many who see this will recall the many gifts they have made to certain parties supposed to be well versed and proficient in the art, with a tacit understanding that the pay for said article was to be a "puff of its merits," which, it was hoped, would induce others to buy; and the profits were to be made out of those who purchased on account of the puff, this latter being almost invariably that it is the superiority of the article that has induced the writer of same to volunteer his testimony, etc.

Cannot the fakirs find an honest way of pushing their wares? Suppose that, to introduce it, a slight difference was made in price, with the guarantee of its being equal to any. Would it not draw as many in the net as any other mode? And it is well known that the loaves and fishes are the "desired quantity." Try to induce sales of goods by honest representations, and not try to claim what cannot be proved. If such modes are to be persisted in, it will result in having a committee appointed by the photographers at large to test all such goods, and, if not superior, condemn them to one and all as not being up to their claims.

Yours truly, X. S.

## STATEMENT.

OWING to a report which we understand has been circulated regarding the withdrawal of our suit against the Eastman Company for infringement of the Roche patent on bromide paper, we deem it proper that the following statement should be made:

The original suit which we brought has been withdrawn for the following reasons: After the suit had been in progress for a time we transferred this Roche patent to the Blair Camera Co., of Boston, they agreeing to prosecute the suit vigorously and also manufacture the bromide paper for us. For some reason, while the suit was not under our control, it was not pushed vigorously, and through delays so much time was lost that, when we subsequently resumed control of the patent and the suit, we found that our time for taking testimony in rebuttal had been lost, and our attorneys informed us that they were not willing to go to trial on the record as it then stood. They communicated with the attorneys for the Eastman Company and requested an extension of time to enable them to take proper testimony, coupled with a notification that if this request was refused the suit would be withdrawn and a new suit. instituted, as in this way we would be enabled to bring in the testimony which was required to make a proper presentation of the case. The request was refused, and therefore the suit was withdrawn, but will be recommenced very shortly.

As to the suit brought by the Eastman Company against us, they have taken no steps in this for several years, which fact ought to effectually contradict the statement that the Eastman Company is vigorously pressing its suit against us.

The only bromide papers that can be used without rendering a party liable to damages for infringement of the Roche patent are the E. A. bromide paper and the Buffalo argentic paper.

E. & H. T. Anthony & Co.

# Process Work.

# A REVOLUTION IN ILLUSTRATING METHODS.

WHAT a revolution has the process of half-tone wrought, not only in the methods of illustrating, but in the materials and appliances used in its production? Just consider the numerous industries that have been affected by the mere introduction of a ruled glass screen before the sensitive plate in the camera. Paper-making has been changed almost completely; coated paper, that is, paper in which the fiber has been covered up entirely with a hard and smooth enamel coating, has become a necessity, and develops a new industry. The superfine ink required has brought out new pigments, and more exacting care in their manufacture into ink. The printing presses that were considered wonderful examples of mechanical skill are being rapidly superseded by machines with cylinders turned true to the thickness of a hair, and journal bearings as carefully made as the works of a clock.

Now think of the number and variety of the new illustrated magazines, books and periodicals, all made possible through this new photo-engraving process. Then contemplate, if you can, the vast number of people engaged in these allied industries, besides the great and rapidly increasing number of workers in the photo-engraving establishments, and you will begin to realize the extent of the aforesaid revolution..

The publishers of the Anthony's Photographic Bulletin will endeavor to keep its readers informed on the latest developments of the photographic process from which these varied industries proceed, and it cannot fail to be of interest to all concerned, either as producers or buyers.

# EXHIBITION OF PHOTO-MECHANICAL PRINTS.

The Society of Amateur Photographers of New York exhibited in their lecture-room recently the finest collection of photo-mechanical prints ever seen in this city. It showed the state of the photo-printing arts up to date, and is worthy of a more critical examination than has been given it.

In the first place, it proved that Americans have every reason to be proud of their progress, and that comparison with the work of those in other countries places them in most cases in the lead. This seems like a rather strong assertion, but the facts bear it out. This claim refers particularly to three-color relief printing, to half-tone, photogravure, and collotype work. Into these four classes can the work exhibited be divided.

The first thing that impressed one on entering the exhibition were the bright colors of many of the prints, a new feature among photo exhibits, and one which promises to be a gradually increasing one in the future. There were photo-mechanical prints in color from the New York Photogravure Company, Mr. E. Bierstadt, the Coloritype Company, Raithby, Lawrence & Co., of Leicester, England; Husnik and Hausler, of Prague, Bohemia; F. W. Niven, of Australia; Gillott, and Boussod, Valadon & Co., of Paris; the Photo-Chrome Company, of New York, and Bohrer, Gorter & Co., of Munich.

The place of honor in that collection of color work undoubtedly belongs to

the four portraits from life, printed in collotype from three-color negatives, by Mr. Edward Bierstadt. The total time required for the sitter to pose before the camera while the three negatives were exposed was at least seven minutes, and, judging from the excess of blue in the prints, it would appear as if the negatives for the red and yellow were undertimed. Though the results were not entirely satisfactory, they record progress, and it was only a man with the frankness of Mr. Bierstadt who would have exposed them to the criticism of those unaware of the difficulties attending their production. There were no other like portraits from three-color negatives exhibited.

To Mr. Wm. Kurtz (the Coloritype Co.) belongs the next honorable mention for his reproductions of water-color drawings in three printings, on a typographic press. His work deserves this place for the reason that his relief blocks can be duplicated by simple electrotyping, and the edition from them becomes therefore unlimited. As his process brings the greatest good to the greatest number, through its prolific quality, it promises to possess the most profitable future. Mr. Frederick E. Ives, who has made an exhaustive study of heliochromy, stated in his lecture during the exhibition, that the three-color printing process was not likely to become commercially valuable except by the three-relief-block method.

By comparing results in three printings by Mr. Kurtz, with Raithby, Lawrence & Co., of Leicester's exhibits in six printings, the prints from Paris in five impressions, and those from Munich in many more, the superiority of the American work will become at once evident. The reproductions of Japanese rugs in three colors by Mr. Bierstadt's artotype process seem perfect. Many of the three-color prints from photo-gelatine by the Photogravure Company were also worthy of high praise.

The best photogravure houses in the world were represented by proofs at this exhibition, and, from a photographic standpoint, our American workers were second to none. The French and German photogravure companies show work from plates on which skilled engravers had spent months of labor with burin, roulette and burnisher, until there was little of the photographic work remaining. Let any one examine a foreign photogravure under a magnifier and he will realize the truth of this. It can be said of the French retouchers that they are bolder in the use of tools, while their German fellow-craftsmen are extremely cautious, so that it is more difficult to determine where photography leaves off and the engraver begins in the plates of the latter. The prints from the New York Photogravure Company, or the Gubelman Photogravure Company, show very little retouching, being, therefore, more entirely photo-mechanical prints.

One of the interesting prints was a reproduction of Rembrandt's Saskia van Ulenburgh in photogravure, shown by the Berlin Photographic Company. It was photographed through a single-line screen by the process developed by von Egloffstein here in New York in 1865.

The half-tone prints show also that our method is superior to the foreign one. Mr. Kurtz exhibited some reproductions of wash drawings in two printings from half-tone plates that were excellent. The National Chemigraph Company showed some results made in the same way, but printed and mounted in imitation of photographs, which they admirably counterfeited. The Photochrome Company and F. Gutekunst exhibited also some admirable work in half-tone.

In collotype work, Mr. Gutekunst had the best exhibit, some of the prints

being 3 feet in length. Mr. Bierstadt's reproductions of old documents in that way were simply perfect. The Photogravure Company, Albertype Company, and Heliotype Printing Company showed also excellent results.

Professor Chas. F. Chandler's exhibit was in itself almost a complete record of photo-mechanical printing progress. Plain silver prints in excellent preservation were shown that were made by H. Fox Talbot in 1844, and published in *The Pencil of Nature*. There were also silver prints made from wax-paper negatives in 1858. In the thirty frames that enclosed his exhibits were indotints, ink photos, photolithographs and many prints from various photo-relief plates.

The success of this first exhibition of photo-mechanical prints will, it is hoped, prompt this Society to hold another during this year and show further progress in the union of photography and the printing press.

# TO COAT COPPER PLATES EVENLY WITH THICK SOLUTIONS.

I have used whirlers and whirlers. A "whirler," by the way, is the technical name given to an instrument for spinning a plate horizontally, so that the centrifugal force will spread over its surface any thick or viscous solution previously poured on the center of it. Herewith is given a cut of a simple whirler that answers all requirements:



Four pieces of ash are screwed together so as to form two letter "T's," the bases of the "T's" are hinged together, and the whole inverted, as shown in the illustration. On the inside of the bottom of the inverted "T's" are fastened two thin strips of wood, on which is laid the copper plate, face down. The plate is held by tightening the strap and securing it with the pivoted block, as shown. The strap at the top secures the whirler to a swivel, that permits it, when suspended, to be revolved rapidly.

After the copper plate is secured in the vise-like jaws of this whirler, the whole is turned up, and the half-tone enamel solution poured on the center of copper plate. The whirler is then inverted and hung by the

swivel, so that the copper plate is suspended face down over a gas flame or other heat, and whirled until dry, when it will be found that the coating is perfectly even.

The length of the whole affair is but 20 inches, and yet I have coated plates in it 24 inches and 2 inches square, with equal success.

#### HALF-TONE ENAMEL SOLUTION.

Last spring I published a formula for an enamel solution for sensitizing copper plates in the half-tone process. Through a typographical blunder 3 grains of chrome alum was printed 3 drachms. The formula has been copied extensively, and even sold by process-mongers, error and all. Later, some of the year books printed it with the mistake. So I take this opportunity to correct it and change the formula slightly, that it may not appear too strange to photo-engravers:

Dodd's or Le Page's clarified glue Water	
White of egg	
Merck's bichromate of ammonia. Chrome alum Water	3 "

Beat up the albumen in 2 ounces of water. Dissolve the glue in 2 ounces of water, grind up the bichromate and alum in 2 ounces of water, and pour the albumen solution into the glue solution, and these combined into the bichromate solution. Stir in, then, 10 drops of aqua ammonia and filter the whole twice through cotton before using. This solution should keep in a dark, cool place ten days without injury.

## HALF-TONE COLLODION.

HERE is a formula for collodion that many half-tone workers find very satisfactory:

Sulphuric ether	10 ounces.
Anthony's Snowy Cotton	100 grains.
95 per cent, alcohol	10 ounces.
Iodide cadmium	
Iodide ammonium	40 "
Chloride of strontia	12 "
Chloride of calcium	12 "

The chlorides may be dissolved in the smallest quantity of water possible before adding to the alcohol.

#### HALF-TONE HINTS.

Foreign half-tone engravers permit more solid blacks in the deepest shadows of their pictures, and gain thereby stronger effects than we do.

Modesty prevents the writer from referring to the intaglio half-tones shown at the recent Amateur Photographers' Exhibition, except to state that the print of a half-tone made in 1865 by General von Egloffstein was loaned by Mr. T. C. Roche, who was associated with the General at that time.

Mr John Sartain, of Philadelphia, ruled screens for Baron von Egloffstein in 1861, with which the latter could experiment on his theory of half-tone. The war took the Baron's attention away from photo-engraving, and when he returned to it, in 1864, it was as a brevet-general of volunteers.

BISHOP POTTER stated recently that among his applicants for the ministry was one who, when asked why he thought himself fitted for that holy calling, said that he "had been a street-car conductor and was tired of standing up." Some may think it is as easy to turn photo-engraver, but the one who will succeed must be possessed of much natural talent, acquire great experience, and then keep in the front row by constant reading and seeing what others are doing, besides experimenting frequently.

Half-tone engraving, as at present used, reached the highest perfection first in Philadelphia, then in New York. Later, excellent work was made in Buffalo. Then Chicago took it up, and subsequently St. Louis. At this time there are few towns of any size in which first-class half-tone work cannot be had. If New York claims any superiority in this class of work, it is due largely to the fact that the great artists, designers and publishers of the country, and consequently its photo-engravers, have the choicest subjects to work on.

As a result of the writer's criticism of the fish glue sold as being "free from acid," it is gratifying to note that one of the leading manufacturers has prepared a glue nearly neutral, more carefully clarified, and is putting it up in glass bottles, at my suggestion, so that process workers will find it fills that "long-felt want."

"The International Annual" of Anthony's Photographic Bulletin is invaluable as a record of each year's progress in photo-engraving, but the latest is particularly rich in studies for the process-maker. A gem of engraving is the picture entitled "Child Study," by the Crosscup & West Engraving Company. So is the "Portrait Study," by the Gill Engraving Company. The Electro-Tint Engraving Company show "A Study" that is deserving of their high reputation. A "Flash-Light Study" is another splendid example of half-tone work. The fact is, all the masters of photo-engraving have representative exhibits in this year's "Annual."

# PROCESS POINTERS.

The omission of the words "engraving" and "etching" from the present copyright law is a serious injury to the photo-engraver's business. All process men should write their representatives in Congress to support House Bill No. 7,835, that is intended to correct the omission in the present law.

To appreciate how well the half-tone idea lends itself to lithography it is only necessary to carefully examine any of the small imitation photographs that are given with cigarette packages.

This is the season when the thick plate glass in the screw-pressure frame is liable to crack. This danger can be avoided by securing strips of rubber at least  $\frac{1}{8}$  inch thick between the plate glass and the ledge on which it rests. Two sheets of rubber should be used between the zinc or copper plate and the back board. Then, if the frame is well made, the glass fitting loosely in it to allow for expansion, and only enough pressure used to bring the sensitized metal plate

in intimate contact with the negative, there should be no annoyance from broken glass.

I RECENTLY noticed two cases of photo-engraving machinery being hoisted on board an outgoing German steamer. They were directed to the Meisenbach Co., who evidently know where to come for the best machinery.

How much will a complete photo-engraving plant cost? is often asked. I recently ordered a complete outfit for line engraving for a Washington newspaper at a cost of \$400, and this included machinery and two electric lamps. The two largest newspaper plants for illustrating in this country I fitted out at a cost of \$1,200 and \$1,800, respectively.

The color blocks used in the Sunday newspapers are made in this way: A negative is made of an outline drawing. Prints from the negative are made on four plates of zinc, sensitized with bichromatized albumen. These prints are inked, developed, dried and dusted with dragon's blood, and heated until they look exactly similar and are all ready for etching. But one is etched, however, and this is used as the black or key plate; the other three zinc plates are flowed with a nearly saturated solution of alum. This gives the zinc a dull leaden color. The ink design is then cleaned from the three plates, and the drawing will appear perfectly plain for the color artist to transfer lines on the plates from Ben Day films, or drop on a grain, according to the effect he desires, after which the plates are etched. It will be noticed that photography is used only in getting the black and white outline design on the four zinc plates. From the one that is etched in relief and used as a key plate a proof is pulled, and this is colored up and used as the original color sketch to guide the etcher in making the color blocks.

It is to be hoped that the trade journals that are beginning to devote so much attention to photo-engraving process notes will give Anthony's Photographic Bulletin credit for the information they receive. Their readers will appreciate the paragraphs more when they know they are copied from an authoritative source.

Mr. Edward Bierstadt celebrated his seventieth birthday recently by sitting for the three orthochromatic negatives from which his portrait was printed in artotype. It is to be hoped that when he sits for a similar picture, ten years from now, the improved heliochromy of the twentieth century will record him as hale and happy as he appears to-day.

# WHAT THE NEW YEAR MAY BRING.

DRY collodio-bromide plates may begin to take the place of the silver bath in the making of process negatives.

There is likely to appear a more sensitive enamel solution for half-tone relief plates.

Improved and cheapened focusing lamps will bring electric light into more general use in place of uncertain daylight.

A simple method of etching aluminium, or of stereotyping with it, will allow cuts to be sent conveniently by mail.\*

A crossed half-tone screen, with undulating lines, such as Gen. von Egloffstein used thirty years ago, will be an improvement on the present straight-line screens.

Progress in heliochromy promises to be the leading effort of experimenters during this year.

Lithography offers special advantages for the printing of half-tone pictures with pure high lights and soft gradations. The combination of both will be an event of the year.

If color artists would but make their designs in the three colors afterwards used in the printing, heliochromy, in its present state, would reproduce the designs perfectly. Try it this year.

Stephen H. Horgan.

## JOTTINGS FROM GERMANY.

Photography in Colors.—Dr. Neuhauss has recently repeated Lippmann's experiments in photography in colors, and exhibited some particularly interesting plates at the Verein zur Förderung der Photographie, in Berlin. The pictures have to be viewed at a certain angle, and Dr. Neuhauss mounts them in a holder that can easily be turned in any direction, looking at the plates through a large lens. The plates used by Dr. Neuhauss are prepared after Valenta's method, which has already been described in the BULLETIN.

Ferric-Oxalate Paper.—R. Ed. Liesegang writes that pure plain paper, impregnated with potassium ferric oxalate, remains unchanged when kept in the dark. Exposed to the light the almost white surface becomes a faint yellow brown. The picture may be developed in various ways; with platinum and silver salts, which are reduced to the metallic state, or with ammonium molybdate or potassium bichromate.

If the paper has been exposed under a negative, a yellow-brown positive results. When kept in the dark this remains apparently unchanged, that is, it does not disappear. But if we try to develop it with silver nitrate, after leaving the paper in the dark for one day, we meet with failure. Other substances, also, which ordinarily will develop the image, fail to act. The ferrous salt reoxidizes in the dark. If a picture which has been laid aside for some time is exposed to light and then developed, a negative instead of a positive is obtained.

The paper should be developed shortly after exposure. If care be taken that the paper is not kept in a damp place, this re-oxidizing may be retarded. This peculiarity may explain some failures in platinum printing.

Silver Intensification of Negatives.—One of the best intensification methods is that with bromide of copper and nitrate of silver. This method has long been used for collodion negatives, and on account of its extremely strong covering power it is particularly suited for line reproductions. Liesegang recommends it also for gelatine plates. The negative, which must be perfectly free from hypo, is treated with a solution of—

Copper sulphate	10 grams.
Potassium bromide	
Water	400 C C

until it is completely bleached, the silver image being changed into silver bromide. After rinsing in water, the plate is immersed in a solution of silver nitrate. An extremely black picture is produced. The washing, after treatment with the copper solution, must not be a thorough one, or the black dense image will not be obtained.

A Substitute for Glass.—A process for the production of a substitute for glass has recently been patented in Germany. Zinc oxide, bicarbonate of soda and bicarbonate of potash are dissolved in a mixture of alcohol and glacial acetic acid. The solution is filtered and mixed with sulphuric ether. In the liquid so obtained soluble gun-cotton is dissolved, and a transparent, somewhat gelatinous, mass produced. After complete solution the mass is left standing to allow any impurities to precipitate and settle. The clear liquid is now poured into a glass vessel fitted with a pipe leading to a cooler. The vessel has a flat bottom, and when all the air bubbles, produced during the pouring, have subsided, the vessel is heated and the alcohol and ether distilled off. The upper part of the vessel is removed, and the mass is left to dry in the open air. product thus obtained is without odor, is colorless, and is not affected by weak acids or by temperature. It will smoulder, but will not burn with flame. addition of coloring matters any coloration can be imparted to this artificial Thick collodion made into plates without the above addition would be too soft and not sufficiently rigid; nor would it possess the clear, transparent appearance of ordinary glass. Prepared as above, the collodion has a glassy appearance, and may be made sensitive to light by the addition of light-sensitive salts.

The Production of Positives Directly from Nature.—The following method of producing positives directly in the camera is recommended by Franz Kogelmann:

- (1) Give prolonged exposure.
- (2) Develop with the ferrous oxalate developer, carrying development until, when the plate is viewed from the back, the high lights appear quite black.
  - (3) Wash in the dark.
  - (4) Immerse the plate in the following solution:

Bichromate of potash	5	parts.
Alum	75	- 66
Nitric acid, c. p	5	6.6
Sulphuric acid, c. p.	10	66
Distilled water	800	66

This solution must be free from any trace of chloride.

- (5) Wash repeatedly and carefully.
- (6) Develop with any good developer until the picture is of the desired strength.

Operations 4 and 5 are carried on in very subdued daylight or lamplight. Operation 6 requires bright daylight. The principal condition for success is that in the high lights the silver salts shall be entirely reduced, so that in bath 4 these are dissolved out, leaving those parts of the film perfectly transparent. The plates should be uniformly coated.

All matter for use in the February issue of the Bulletin must reach us on or before January 20th.

## OUR ILLUSTRATION.

OUR frontispiece this month is interesting, for three reasons: First, the plate used was a Cramer isochromatic, a brand that has found much favor with photographers. Isochromatic plates are especially well adapted for work with artificial light, and our illustration shows the effect of the combination.

The twenty-five negatives from which the illustrations were printed were all made by the aid of the Anthony electric-light apparatus. This gives a uniform, and hence economical, light, and is spoken of very enthusiastically by Messrs. Urlin & Pfeifer, to whom we are indebted for the illustration. Frequent reference has been made to this light in the Bulletin, but a few words, in answer to many queries received, may be welcome. Our publishers have recognized the validity of the patent granted to B. M. Clinedinst, Jr., by the United States, No. 523,323, dated July 24, 1893, and are prepared to furnish a license with each apparatus.

When ordering the apparatus the kind and the voltage of the current furnished by the nearest electric lighting company must be stated. In fact all details should be obtained, and then absolute satisfaction can be guaranteed. It should be borne in mind that no mechanical skill or knowledge of electricity is required for the proper working of the apparatus. The lamp and rheostat are furnished ready for immediate attachment to the wires which are put in by the electric company which supplies the current. The apparatus is not suitable for traveling photographers unless the same current can be obtained at the various places visited. The time of exposure is about the same as with good daylight. The reflecting screen is easily made, consisting simply of a wooden framework covered with any opaque material, which is in turn covered with a light pink paper. This latter is liable, after continued use, to become faded, and should then be replaced with fresh paper. The best light is obtained when the upper carbon is the brighter.

The third point of interest in our illustration is the paper on which the print is made. This is the new matt-surface paper, Aristo-Platino, made by the American Aristotype Company, and in use in most of the prominent galleries in the United States and Canada. It is probably the easiest working paper made, and is the same price as the ordinary paper. A remarkable range of tones, from sepia to dead black, may easily be obtained. An exquisite illustration on this paper, by Falk, forms the frontispiece to "The International Annual" for 1895.

The printing is carried to a greater depth than usual, and the prints are then washed in several changes of water. For warm or sepia tones the plain gold and water toning bath, made slightly alkaline with a saturated solution of borax, is used. For black tones the prints, after coming from the above bath, are immersed in a sulphocyanide bath.

The fact that all the big prizes at the 1894 photographic conventions were won by prints on this paper demonstrates that the judges, who were selected from the most prominent photographers, were satisfied that the good qualities in the negatives were reproduced adequately on this paper.

Our advertising columns contain notices of novelties and useful articles, and should not be skipped by the reader. When ordering goods, do not omit to mention this magazine.

#### THE BULLETIN FOR 1895.

DURING the year that has passed the Bulletin has faithfully recorded such progress as has been made in photography. Probably the subject of most interest to professional photographers has been the introduction into this country of an efficient system of artificial lighting in the studio. This matter has been exhaustively discussed, and by means of many actual photographs and half-tone engravings its practicability has been demonstrated. Many of the most prominent photographers in the country are now ardent supporters of electric and flash illumination for the studio, and the Bulletin congratulates itself on having been a powerful factor in the introduction of an economical substitute for the uncertain daylight. The amateur photographer has by no means been neglected; indeed the Bulletin has endeavored to present to its numerous subscribers the best of everything in the best possible manner.

For the coming year we can offer to our readers new features which we feel sure will be appreciated. The various photo-mechanical processes have hitherto received but little attention at the hands of American photographic journals. The Bulletin proposes to fill the vacancy, and matter on this subject will be published every month. Last year the Bulletin was copiously illustrated with half-tone engravings, and these with the actual photograph as frontispiece made it the best illustrated magazine in the world. These features will be extended this year, placing the Bulletin far beyond anything heretofore attempted.

Photography in London will be taken care of by Mr. W. H. Harrison, recently editor of *The Photographic News*. The doings and sayings of the best photographers in England will be carefully written up, and our readers will thus be kept thoroughly posted on work abroad.

Recognizing the immense amount of valuable matter in German photographic journals, competent translators will cull therefrom such matter as is deemed of interest.

The BULLETIN is the one American journal that makes a specialty of the doings of the American photographic societies. Secretaries are cordially invited to send in reports on or before the twentieth day of each month. Any papers read at such societies will be published.

Of particular interest will be a series of articles by Mr. D. L. Elmendorf on "Lantern Slides, How to Make and Color Them." Those who have had the privilege of seeing Mr. Elmendorf's work and hearing his lectures will be able to form some idea of the value of these articles.

As stated above, the illustrations will be made a special feature. With this end in view we have invited the photographers of America to prepare sets of negatives and can promise our readers actual photographs from posing studies especially made for the BULLETIN.

In addition we will soon present a series of instantaneous equine studies by John Rösch, these being printed from the negatives that were awarded the first prize by the Photographers' Association of America. Of unique interest will be a set of actual photographs from negatives by Richard Wetherill, of the haunts of the cliff-dwellers.

The BULLETIN for 1895 will, without doubt, be the leading photographic journal in America.

Concluding, we would ask our readers to send us any photographs that they consider of special interest, giving full details regarding them. These we will reproduce, with, if desired, a request for general criticism.

#### THE GELATINE DRY PLATE OF TO-DAY.

A MONG the many requirements of the photographer of the present day, particularly at this period of the year, is a sensitive plate that will enable negatives to be produced possessing all the good qualities of negatives taken in the clear light of a

bright summer's day; in other words, a negative possessing perfect gradation of tone, full body, and a sparkling crispness, that will leave a faithful impression of subdued high lights and detailed shadows in the positive that is printed from it. No matter whether that positive be upon paper, a transparency to adorn the window, or for enlarging purposes, the value of a plate that is capable of producing the above class of negative, in the depth of winter, cannot be overestimated.

A considerable number of plates have been placed upon the market, claiming to meet all the above requirements, together with the desirable quality of great rapidity, yet, as many photographers well know to their annoyance and loss, plates fulfilling the above requirements are an exception. The writer has had some thousands of plates of various brands and makes pass through his hands for development in the laboratory of Messrs. Davis & Sandford, artist photographers of Fifth avenue, New York, the trials amounting at times to as many as one hundred and forty plates per day, ranging in size from  $6\frac{1}{2} \times 8\frac{1}{2}$  inches to  $25 \times 30$  inches, and it is not an exaggeration to say that the plate that has been found to meet the above requirements is that known as the "Climax." The development of this plate is very rapid, while the time of exposure is a little less than half that required for many other so-called rapid plates. The high lights keep without becoming chalky, while the development continues well down into the shadows. In fact the negatives produced on the "Climax" plate will, without doubt, satisfy the most exacting photographer.

ALFRED J. JARMAN.

A PIECE of apparatus that will be heartily welcomed by every professional photographer is the Anthony automatic cabinet attachment. The attachment fits on the back of the camera, taking the place of the ground-glass and being designed for the use of  $4\frac{1}{4} \times 6\frac{1}{2}$ ,  $5 \times 7$  or  $5 \times 8$  plates. A ground-glass permits of proper focusing, and then by one movement from left to right the focusing screen is pushed out of the way and the plate-holder, with slide drawn ready for use, is placed in position behind the lens. One movement from right to left automatically replaces the slide and restores the ground-glass to its original position. The plate-holder cannot be removed until the slide is properly replaced. This attachment permits of extremely rapid work, obviating the necessity of removing the ground-glass and placing the holder in position, this latter operation requiring that the attention of the operator be diverted from the subject. With this new attachment the holder is placed with plate ready for exposure without the knowledge of the sitter.

#### SOCIETIES.

INDIANA ASSOCIATION OF PROGRESSIVE PHOTOGRAPHERS.—The first convention of this association will be held in the Maennerchor Hall, Indianapolis, March 4th to 9th, inclusive, 1895. Prizes will be awarded in the following classes: Genre Class—Two pictures, 13 inches or larger; Class A—Six pictures, 13 inches or larger; Class B—Twelve pictures, Paris panels to 13 inches; Class C—Eighteen pictures, any size under Paris panels; Class D—Commercial work, six pictures, any size; Class E—Architectural views, six exterior views, any size; Class F—Interiors, six pictures, any size; Class G—Landscape photography, six pictures, any size. At the meeting of the Executive Board the following resolutions were adopted: That every exhibitor be given a certificate of rating on his work, and that the Secretary mail to every photographer in the State a list of the classifications, rules and regulations. That every member be requested to furnish one or more negatives for lantern slides, the same to be exhibited at the Convention for criticism, the negatives to be forwarded to B. Larrimer, Marion, Ind. The programme will consist of addresses by members

of the Association, and general discussion of all matters relative to photography. The following are the committees: On Hall, Messrs. Shores and Holloway; on Buttons, Mr. B. Larrimer; on Social Entertainment, Mr. Kothe. A demonstration of the use of the electric light in photography will be made.

For further information address E. E. Shores, Secretary, Vincennes, Ind., or A. Heimberger, President, New Albany, Ind.

Newton Camera Club.—At the annual exhibition of this Club some seven hundred photographs were shown. The judges were C. F. Pierce, Daniel J. Strain, D. W. Butterfield, E. J. Foss and W. A. French, and their awards were as follows: Portraits, club prizes: First, Charles E. Lord; second, W. E. Peabody; third, F. W. Sprague, 2d. Open competition: First, H. B. Pearson; second, Charles E. Lord; third, W. E. Peabody.—Landscapes, club prizes: First, E. Stockin; second, Charles E. Lord; third, H. F. Guild. Open competition: First, E. Stockin; second, Charles E. Lord; third, F. W. Sprague, 2d. Marines, club prizes: First, A. F. Gilbert; second, F. W. Sprague, 2d; third, E. B. Hitchcock; open competition: first, A: F. Gilbert; second, F. W. Sprague, 2d; third, H. B. Pearson.—Snap shots, club prizes: First, A. F. Gilbert; second, W. H. S. Pearce; third, Dr. G. W. Grant.—Interior, club prizes: First, A. S. Kilburn; second, A. S. Johonnot.—Bromide enlargements: First, E. E. Snyder; second, F. W. Sprague, 2d.—Lantern slides, F. W. Sprague, 2d.

THE DEPARTMENT OF PHOTOGRAPHY OF THE BROOKLYN INSTITUTE.—On Friday evening, November 30th, Mr. Abraham Bogardus, the veteran photographer of New York, gave the department an amusing and instructive description of some of his experiences during "Forty Years Behind the Camera." When the news of Daguerre's great discovery first drifted across the ocean, Mr. Bogardus was among the first to become interested in the new art, and he has lived to assist in developing its possibilities to a point undreamed of by the great French physicist.

Mr. Otis A. Poole, of Yokohama, favored us on Tuesday evening, December 4th. His lecture on Japan, illustrated by over one hundred and fifty beautiful colored lantern slides, was the attraction. The large hall was filled to overflowing, and so many people had to be turned away from the doors that it was decided to repeat the lecture on Friday, December 28th, at Association Hall, Fulton street. At the Thursday evening meeting, on December 6th, Mr. Wundram exhibited his set of lantern photographs.

Dr. N. B. Sizer interested all with a talk upon "Our Enemy the Microbe" on Thursday, December 13th.

The meeting on December 20th, was devoted to a lantern photograph exhibition of slides made by the members. It was decided to form a department collection of best lantern slides made by the members, only meritorious slides to be admitted.

Early in January, Prof. Hallock, of Columbia College, will deliver a lecture on photographic optics, and on the 29th of January, Mr. George G. Rockwood, the well-known New York photographer, will tell us about "Sunlight and Shadow; or, Photography Up to Date," giving illustrations of "freaks" in photography, and photographing the audience by flash light.

ALBANY CAMERA CLUB.—At the regular meeting of the Albany Camera Club, held December 7, 1894, the following gentlemen were elected members: George H. Guardineer and A. W. Floyd, both Associate. Mr. Peter J. Callen was by his request transferred to active membership.

Prof. E. W. Wetmore signified his intention of beginning his first lecture at the next regular meeting, on "Light and Color."

Dr. S. B. Ward gave a most interesting talk on his recent trip to Denver and other parts of Colorado, illustrated by lantern slides of sights and scenes on the way.

He described in a most picturesque manner mining life at the now famous town of Crede, and a very pleasing explanation of how gold and silver are mined. After a vote of thanks had been extended to Dr. Ward for his entertaining lecture, the meeting adjourned.

AKRON CAMERA CLUB.—At the annual meeting the following officers were elected: President, Ed. Terrass; Vice-President, Henry Canfield; Treasurer, F. H. Adams; Secretary, Miss Maggie Mitchell. The December meeting was held at the home of Mr. and Mrs. J. Frank, and the various committees were appointed. Professor Knight gave an interesting talk on the use of orthochromatic plates and color screens, illustrating his remarks with some very fine landscapes. An exhibition of lantern slides followed. The Club meets again on the second Tuesday in January at the home of Mr. Houghton.

Mystic Camera Club.—This Club is now in a prosperous condition and has made good progress during the past year. At the December meeting, Mr. J. De Nuncio gave a demonstration of the new paper manufactured by the American Aristotype Company, the Aristo-Platino. Messrs. Hildreth and Green also demonstrated the photogenic paper:

BUFFALO CAMERA CLUB.—The following interesting report is kindly furnished by the Secretary, Mr. William J. Haskell.

"On the evening of December 10th the set of slides by the Chicago and Toronto Clubs were shown at the Club rooms. The Chicago views were considered fine; those from the Toronto Club did not seem to be fully up to what we expected, having our expectations based on a personal knowledge of their print work.

"December 15th, at the Club rooms, a meeting was held, but the lecturer failing us at the eleventh hour, was a loss not to be considered for a moment, when we found that we were to be addressed by Mr. Lucius Hitchcock, head instructor of the Art Students' League. His address was quite informal, but none the less important, and full of interest to his hearers, and I append a brief synopsis of his remarks, though much is omitted, and the personal interest cannot be expressed in words.

"I wish the readers of the BULLETIN could have enjoyed with us the manner in which Mr. Hitchcock presented his remarks to the uninitiated; at the same time leading the more advanced amateur while he carried the tyro beyond the narrow conceptions of ordinary landscape work into the broader fields of artistic composition.

"In as brief communication as this is, it is, of course, somewhat vague and meaningless to omit illustrations, but with one or two exceptions, where they would be particularly appropriate, the matter will be clear.

"In selecting a view to be produced in panel form, let the composition of light and shade assume the spiral or double curve, so preserving the interest and balance throughout the scheme. It is desirable, in seeking information upon the subject we are considering, to study the illustrator rather than the painter, and as a great help you will do well to examine closely the best examples as produced in the popular pictorial publications by such artists as Smedley, Pyle, Vierge and others.

"Place the accent or strong note of the scale of tones, say, in the second middle distance, being careful that the lines of the composition lead the eye to the interest. Landscapes by Pelouse are simply charming, and you will do well to study them carefully. Simplify your composition. Here our attention was directed to several good examples, being specially in point. They were productions by Dr. Bernard Bartow. The picture was a water scene; a long line of breaking surf ran from lower left to upper right of the scene and riding the incoming wave was a small boat manned

by two oarsmen who were making a landing; the near foreground shows the swash following the preceding wave on its return. Dispense with needless detail; as much so as reasonably consistent with good taste.

"Mass your light and shade harmoniously, and balance the view, but not by

repetition of any one tone unless in another degree of prominence.

"Do not be deluded with the idea that to soften your picture it must necessarily be out of focus; in other words, don't be fuzzy. Have a care in selecting the foreground, as much depends on that feature. Let enough be shown to give depth, and so chosen as to carry the eye to the interest; not too little or too short, as then the picture will seem to be on the point of falling forward. On the other hand do not let it be too long, or deep, for in that case your interest will be dwarfed and your composition fail. It might be well to say right here that the beginner is strongly inclined to embrace in his picture all that he sees; but while it at first seems wrong to him, yet later he will learn to know that finer and more effective work is attained by a judicious exclusion.

"It seems to me almost a fault that the lens of a camera should include so much.

"In selecting a view, a simple method may be adopted which will materially aid. Use a small mirror, standing with your back to the view desired; or the same end is served, by placing before the eye a card in which you have cut an opening corresponding to shape of plate used. By this means, much of the surrounding scenery is cut off from view, which would otherwise affect your judgment.

"While your early instructions contain the strict injunction to have your back partially or quite towards the sun while taking a view, such is not always the course to be pursued. Some of the most beautiful effects in photography may be obtained by

facing the sun partially or wholly, and shading your lens more or less.

"To attain and preserve depth, have the prominent and even the secondary lines of the composition lead toward the interest.

"Finally, take time; be careful; be observant; apply all your knowledge to the end in view; study and accomplish simplicity, which is the charm of composition.

"I know some of you want to say this is all well enough for the painter who picks and leaves as he sees fit to attain effect, but what are you to do when you know that your camera, like a dutiful child, takes what is set before it and don't answer back

"To this I would say, in closing, that Nature provides all the conditions suggested. It is your duty as students to look for them and avail yourselves of her

bountiful provision and so succeed.

"To say that our guest received the hearty thanks of his hearers is only to speak mildly, and if in this lengthy letter anything worthy of selection by you is found, I can only hope that you will give it to your readers and that it will profit them."

# IMPROVEMENTS IN APPARATUS.

AN ADDITION has been made by J. H. Dallmeyer, Limited, to the unequaled series of lenses furnished for portrait work. The new lens is known as the 2 D; diameter of lenses,  $1\frac{1}{2}$  inches; back focus,  $6\frac{1}{2}$  inches; size of group,  $6\frac{1}{2} \times 4\frac{3}{4}$ ; size of view,  $6\frac{1}{2} \times 8\frac{1}{2}$ . Other new lenses of interest to amateur photographers are two rapid rectilinears, one being a  $5 \times 8$ , of 10 inches equivalent focus, and the other a special hand-camera size, of  $5\frac{1}{4}$  inches equivalent focus. Of rapid landscape (long focus) lenses, two new ones are announced: IAA, for  $3\frac{1}{4} \times 4\frac{1}{4}$  plates, 5 inches equivalent focus; and IA, for  $4 \times 5$  plates, 7 inches equivalent focus.

In an article on tele-photo lenses in "The International Annual" of 1895,

a writer points out the desirability of an instantaneous tele-photo lens. These are now made by Dallmeyer, and may be obtained from our publishers. The new series include moderate-power tele-photographic attachments, for use with rapid rectilinear lenses. These can be fitted to any lenses, providing the rapidity of the lens be not slower than f/8. The attachments can easily be removed, and will not in any way interfere with the ordinary working of the lenses when used alone. It is only necessary that one size larger flange be employed on the camera front. By the aid of these attachments a short focus lens can be made to any focal length desired, limited only by the length of the camera, and as most modern cameras are capable of considerable extension, large magnifications and a considerable range of equivalent foci may be obtained.

A patent tele-photographic detective lens will be much appreciated. This lens, consisting of the patent stereographic and a  $2\frac{1}{2}$ -inch negative element, covers a  $3\frac{1}{4} \times 4\frac{1}{4}$  plate at f/10, a  $4\frac{3}{4} \times 6\frac{1}{2}$  plate at f/13, and a  $6\frac{1}{2} \times 8\frac{1}{2}$  plate at f/17, the respective corresponding foci being 15, 20 and 25 inches, with actual back extensions of 5,  $7\frac{1}{2}$  and 10 inches, the negative element projecting about  $2\frac{1}{4}$  inches into the inside of the camera. The portrait lens combinations for tele-photo work, while not giving the same magnification as the high-power lenses, are more rapid and easier to work in actual practice. A distinguishing characteristic of the tele-photo detective lens is the remarkable flatness of field it possesses. The following table will be found useful:

MODERATE POWER TELE-PHOTOGRAPHIC LENSES.

PORTRAIT LENS COMBINATIONS FOR INSTANTANEOUS TELE-PHOTOGRAPHY.

Lens.	Back focus.	Plate covered at full aperture.	Equivalent focus.	Intensity.	Angle of view.
1. Patent stereo and 2½-inch negative	Inches. $4\frac{1}{4}$ 5 6 $7\frac{1}{2}$ 10 12 $14\frac{1}{2}$ 18 22 $\frac{1}{2}$ 10 $\frac{1}{1}$ 10 $\frac{1}{2}$ 18 $\frac{1}{2}$ 10 $\frac{1}{2}$ 18 $\frac{1}{4}$ 10 $\frac{1}{2}$ 10 $\frac{1}{4}$ 10 $\frac{1}{4}$ 17 20 $\frac{1}{2}$ 25 $\frac{1}{2}$	Inches.  3\frac{1}{4} \times 4\frac{1}{4} \times 3\frac{1}{4} \times 4\frac{1}{4} \tim	Inches.  13½ 15 17 20 25 29 34 41 50 19½ 23 29 33 38 44 55 24 28 34 40 47 54 66	f/9 f/10 f/11\frac{1}{8} f/13 f/17 f/19 f/23 f/27 f/33 f/10 f/12 f/15 f/17 f/19 f/22 f/28 f/8 f/9 f/11 f/13.5 f/16 f/18 f/22	Degrees.    18

For extension from flange to screen add to "back focus," I,  $2\frac{1}{4}$  inches; 2,  $3\frac{1}{2}$  inches; 3,  $4\frac{1}{2}$  inches.

# Anthony's \* Photographic \* Bulletin.

DEVOTED TO PHOTOGRAPHY AND PROCESS WORK.

EDITED BY

Prof. CHAS. F. CHANDLER, Ph.D., LL.D., FREDERICK J. HARRISON. Published on the First of each Month.

An Actual Photograph in Each Issue. Readable Articles on Topical Subjects.

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Sample Copy, 25 Cents.

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Di	scount on	twelve issue	es -	20 I	er cent.	

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Subscriptions to the BULLETIN will be received by all Photographic Stock Dealers in any country, by the American News Company, and by the publishers,

E. & H. T. ANTHONY & CO., 591 Broadway, New York.

#### BOOKS RECEIVED.

All books noticed under this heading may be obtained from E. & H. T. Anthony & Co.

THE HALF-TONE PROCESS, a practical manual of photo engraving in half-tone on zinc and copper, by Julius Verfasser; fifty-six illustrations. Price, 75 cents. Practically the only work on the half-tone process. A thoroughly practical guide for the beginner. The subject is discussed under the following headings: "What is Half-Tone?" "Studio and Fittings," "The Screen," "The Dark Room," "The Printing Room," "The Etching Room," "The Mounting Room," "Negative-Making," "Failures and Remedies in Negative. "When the Heading Room," "The Etching," "Mounting and Proving." It is a valuable addition to photographic literature useful to beginner and tographic literature, useful to beginner and expert.

BRITISH JOURNAL ALMANAC. The photographer's library is incomplete without this book. As bulky as ever, the matter is of un-usual excellence. The editor writes on "Bypaths of Stereoscopic Photography," and the many original articles touch on every topic of photographic interest. An interesting illustration is a specimen of photo-chromographic block printing. Price, 50 cents; postage, 20 cents.

GEMS FROM THE PRIZE EXHIBIT. One of the handsomest publications ever issued. Handsomely bound in cloth, 14 x 17 inches in size, and contains fifty-two superb reproductions in half-tone by the Chemigraph process. Contents are large plates, 10 x 13 inches, from photographs by Pirie Macdonald, W. M. Morrison, S. L. Stein, George Steckel, W. H. Jackson, Rösch, Arthur & Philbric, Guerin, Jackson, Rosen, Arthur & Philbric, Guerin, D. R. Coover, J. Landy, Strauss, R. E. M. Bain, Jones & Lotz, W. F. Uhlman, Cornell & Saunders, R. P. Bellsmith, G. E. Curtis, W. J. Root, Dana, George Sperry, Pifer & Becker, F. W. Medlar, John Rösch and the Baker Art Gallery. Every photographer should have a copy of this book. Price, \$2.50.

Mosaics is as usual crammed with matter of interest to all photographers, professional and amateur. The usual review of the year occupies the first part of the book, and the balance is filled with valuable hints and suggestions from many of the most prominent photographers in the country. The professional photographer will find valuable hints on the treatment of his patrons, on the manipulation of the various materials used by him and on all the new things which lie at his hand. Price 50 cents.

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# ANTHONY'S

# Photographic Bulletin.

#### EDITORS:

PROF. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

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#### TRANSPARENCIES.

A MONG the many branches of photography that the amateur will find it convenient to practice during the winter months there is none that will give so much pleasure as the making of what are known as transparencies. The making of lantern slides and window transparencies seems to belong particularly to the amateur photographer, and yet, judging by the profuse advertising of manufacturers of transparencies by methods other than the purely photographic, this branch of photography should be remunerative to the professional if properly worked up. There are many ways in which the professional photographer might add to his income, but the majority seem content to plod along on the old lines. The production of a positive calls for no great outlay, and the exhibition of a finished, neatly framed transparency when the customer calls for his prints would often result in a sale. Transparencies are made for two purposes: For the duplication of negatives, and for ornamentation. We propose here to outline generally some of the methods employed for producing transparencies for ornamental purposes.

With this, as indeed in every department of photography, neatness and cleanliness are essential. A transparency, to be truly ornamental, must be as nearly perfect as possible. Failure to properly matt the negative, to clean the glasses, to properly adjust the frame, results in a transparency, certainly, but not one that can be displayed with anything like pride. A transparency, by its prominent position, shows plainly any defects, and painstaking should characterize the process from start to finish. Then, again, the subject should be of general interest, one that will serve as a topic for conversation. The uses to which transparencies may be put are many. Hall and piano lamps, hall and room windows, fire screens and many other similar applications will help to beautify the home and repay somewhat the good lady of the house for pyro stains on the carpet and the appropriation of many of the household utensils.

The blue-print process lends itself admirably to the production of trans-

parencies. The ordinary blue-print paper of commerce is printed somewhat darker than usual, washed well and dried, being then rendered translucent by impregnating the paper with paraffin. A few shavings of solid paraffin are sprinkled over the print, and these are melted by means of a hot iron; or translucent paper, such as French parchment paper, may be coated with the blue print solution. This paper may be obtained from most dealers in drawing materials. We have many times given the formula for the solution, but repeat it here for the benefit of our many new subscribers:

I.	Red prussiate of potash	60 grains.
	Water	I ounce.
2.	Citrate of iron and ammonia	70 grains.
	Water	I ounce.
	Mix equal parts of 1 and 2.	

Such blue-print transparencies may be mounted between two pieces of glass, or between two mats cut out of cardboard. In the latter case, however, they are liable to become dirty and broken.

In the January Bulletin of a year ago, a method of making blue-print transparencies on glass plates or on films was described. Old or fogged plates are soaked until quite clean in a bath made up of equal parts of the following solutions:

I.	Red prussiate of potash	I ounce.
	Water	16 ounces.
2.	Hyposulphite of soda	I ounce.
	Water	16 ounces.

After a thorough washing the film or plate is immersed for one minute in a solution of:

Citrate of iron and ammonia	1	ounce
Water		

and then dried in the dark. After printing by daylight until the shadows are brown, the plate is flowed with a solution of 1 ounce of red prussiate of potash in 4 ounces of water. When development is complete, the plate is washed until the high lights are clear.

Gelatino-citro-chloride plates, introduced by Abney, and now obtainable under various names, yield exquisite transparencies. These are printing-out plates, coated with a gelatine emulsion containing sodium chloride, potassium citrate and silver nitrate. If simply fixed after printing they give a rich sepia tone, but any tone may be obtained by using the toning solution as applied to sensitized papers.

But it is with the slow dry plates, sold especially for the making of positives, that the amateur and professional will make most of these transparencies. Probably the Carbutt A plates are the best for this purpose, and on these plates transparencies may be made by contact or through the camera. The directions given by Professor D. L. Elmendorf, in his articles on "Lantern Slides—How to Make and Color Them," will apply equally well to the making of transparencies, and to these articles we will refer the reader. It must be continually borne in mind that finger-marks and stains, which in a negative may be tolerated, show up with glaring distinctness in a transparency.

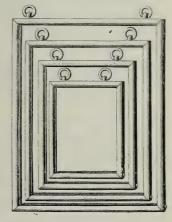
Perhaps the finest transparencies are made by the carbon process, but this, as well as the methods of toning the positives, we must leave for another issue.

It is in the mounting of transparencies that the good taste of the photog-



rapher can assert itself. For the proper viewing of the positive, it is necessary to back it with some translucent substance, and for this purpose ground-glass is usually employed. Glasses with etched and colored borders are sold for this purpose, and may be used with advantage when the positive is strong and brilliant. The ground glass and the glass side of the plate must be thoroughly cleaned, and should then be fastened together with Sheplie gum paper, the ground surface being on the outside. As a better method, Abney recommends dissolving to saturation white

wax in ether. The solution is filtered, and to each ounce another ounce of ether is added. The glass side of the plate is flowed with this, and allowed to dry. The mounted positive is now framed according to the taste of the operator and to the purpose for which it is desired. For window use, metal frames are sold, some of which are shown in the accompanying cuts. The bottom of the frame is removed by taking out two small screws, the plates pushed home, and the bottom replaced. It not unfrequently happens that the screws will not admit of being entirely replaced. In such cases a small part of each corner of the plates must be worked off by means of a key.



NEWMAN, of New York, sends us a pleasing study, which we reproduce here in half-tone. This style has become popular of late.



#### ITEMS OF INTEREST.

A T a meeting of the Richmond Camera Club, Mr. Taylor gave a practical demonstration of his method of making plate-sunk mounts by means of cardboard plates or dies. A piece of cardboard is taken of the exact size of the mount and a piece cut out from the center  $\frac{1}{16}$  inch larger each way than the platemark it is desired to make. The piece thus removed is then cut down  $\frac{1}{16}$  inch, and forms the die, while the remainder of the board forms the matrix or mould. The die is attached to the mould by a strip of linen passing from the back of the latter in such a way that when the mount is placed between them the die is exactly over the center of the aperture of the mould. Thus placed in position, mould, mount and die are inserted in a copying press, and with a turn of the screw a neat and effective plate-sunk mount is produced. Dies and moulds can, of course, be cut to any shape or size, and can be used repeatedly. We are indebted to *Photography* for the above.

Our friends of the *Photogram* have been visited by the fire-fiend, but their January issue is a triumph of press-work, and the matter is of unusual interest. By the way, they reproduce one of our illustrations, showing the method of working the Anthony electric light apparatus, but fail to give the Bulletin any credit for the same. This was probably an oversight, and we would further remark that the said illustration does not show the interior of a famous New York photographer's gallery, but our own office.

Mr. Cotes-Preedy, in a letter to *Photography*, makes a suggestion that might with advantage be carried out by many of our readers. He writes: "I am fully aware that the hospital staffs do their utmost to cheer the inmates, but cannot we assist them in their labor of love? Many of us have prints which are put aside, because we do not consider them good-enough specimens of our ability. Why not mount these in a small album? A large one would become wearisome to most patients. If landscape subjects, write under them the names of their localities; if architectural, a few lines on their history and age; if of figures, street life, or anything amusing, give them an appropriate title. Send this album, when completed, to a hospital in the neighborhood. In this way we may gladden the hearts of many sufferers, with little expense to ourselves."

George H. Hastings, of Boston, sends us some exquisite proofs from negatives on "Climax" plates, and made by the Anthony electric light apparatus. Truly a great combination.

A WELL-FITTED photographic stock house has been opened by F. E. Colwell & Company, at Utica, N. Y. Mr. F. E. Colwell was for many years associated with the firm of F. Hendricks & Company, of Syracuse.

The new firm has put in a full line of the apparatus, chemicals and general photographic goods manufactured by our publishers, and will, no doubt, receive considerable support from their many friends.

We tender our congratulations and best wishes for the success of the venture.

THE new year also sees the opening of what promises to become a famous

western house. Mr. Charles R. Stevens, well known throughout the West for the past nine years as the representative of Sweet, Wallach & Company, and Mr. George P. Mackin, for fifteen years with Hiram J. Thompson, have formed a stock company, of which the former is president, and the latter, secretary, known as the Chicago Photo Stock Company. They have a complete line of the goods of our publishers, and will be found well in the lead in all things photographic.

Writing of "The International Annual" for 1895, Abraham Bogardus remarks: "In a late article I said 'Photographic literature will soon stand on an equality with the most advanced in any department." 'The International' makes this prophecy a confirmed fact; what is there left for you to say next year? Here we have instruction, advice, caution and examples from cover to cover."

The December issue of the Canadian Photographic Journal was destroyed in the big fire in Toronto. With characteristic energy, our good friend Gilson started on his January issue, and will make it particularly attractive. One of the features of this number will be an Aristo-Platino print, from the gallery of Frank A. Place, of Chicago.

DEATH has been busy of late among photographers. R. L. Kidd, Col. C. G. H. Kennear, Alexander Ayton, Jr., R. Keene and Fritz Luckhardt will be missed from European photographic circles.

Those of our readers who are interested in process work and would like to get working details of the half-tone process will be interested in Verfasser's new book, "The Half-Tone Process," a practical manual of photo-engraving in half-tone on zinc and copper, published in the United States by E. & H. T. Anthony & Co., and in England by Percy Lund & Co.

A FAIRLY good substitute for ground-glass for the skylight may be had by applying a thick coating of starch to the plain glass. It possesses the advantage that it can be removed when desired by a cloth saturated with tepid water.

Mons. E. Burcker finds that a solution of bichloride of mercury made in ordinary water undergoes decomposition, due to the simultaneous action of light, air, and the inorganic and organic impurities present in the water. These decompositions do not take place in the dark, nor do they do so if distilled water be used for solution of the mercury salt.

Our daily newspapers are earning a reputation, and not an enviable one, for the utter nonsense they publish regarding photography in general, and particularly photography in colors. If they cannot engage a competent writer, why not confine their efforts to enlighten the amateur to making extracts, properly credited, from standard photographic magazines? And, while on this topic we would remark that there are several photographic magazines in this country that are made up entirely, or very nearly so, of articles copied bodily from their contemporaries. No attempt is made to furnish any original matter, unless it be a

few paragraphs, furnished by advertisers. We regret to see this. One or two articles from foreign sources, and the gist of others, with comments on the same, accompanied by some efforts on the part of the editor to personally meet the wants of his subscribers, would seem to be correct and savor less of piracy. It seems to us a case of take all and give nothing in return. It is somewhat of a joke when the same journals style themselves the leading journals of America.

Lantern screens with a tastefully designed border are being introduced and should meet with a favorable reception. A 10 or 12-inch border on a 10-foot screen is sufficient, and looks well.

Look after the water-pipes, or you will have trouble and plumbers' bills.

THE newspaper editors, who have so often calmly and coolly reproduced copyrighted pictures without permission or even acknowledgment in the way of a line stating the name of the photographer, are learning that there are some members of our fraternity who, having copyrighted a picture, have courage and capital enough to bring them to account. The inside history of some of these cases is interesting and will some day be published.

We would call the attention of our professional friends to the advertisement of the Ideal Crayon Company. Now that business is somewhat dull, an inducement in the way of an enamel bromide print at a reasonable price should prove a source of revenue. We have known this company for some time, and can recommend them as a painstaking, satisfaction-giving concern.

At a recent meeting of the Society of Amateur Photographers, Dr. Janeway discussed the article on Monochrome Prints, written for "The International Annual" by Mr. M. Toch. He stated that first trials resulted in inability to obtain pure whites, but that further information from Mr. Toch resulted in complete success. As soon as Mr. Toch recovers from a severe attack of the grip, he will write for the readers of the Bulletin an explicit account of his experiments on the production of prints by the methods outlined in the "Annual."

Our genial friend, Mr. Rockwood, referring to our paragraph in the January Bulletin concerning him, writes: "Are you addicted to the use of fire water? There is just one fact in your statement and that is the last—that I am not 'tired.' I have been four years in my new gallery and away from Union Square. My prices are \$6 per dozen; averaging \$8, for extra negatives, etc. I am in my thirty-sixth year, and near its close, in New York, and shall make an earnest effort to round out the half century as a photographer and as the oldest customer of your publishers." We deny the insinuation and hope that our veteran friend's wish will be realized. The photographic fraternity can ill afford to lose so old and tried a friend as George G. Rockwood.

WE would call the attention of our readers to the many novelties in our advertising columns. When ordering goods a mention of the BULLETIN will involve but little extra trouble and will be of benefit to us.

## PHOTOGRAPHY IN LONDON.

THE LIGHT OF THE SUN.

Some interesting work, from a high science point of view, is going on at the Royal Indian Engineering College, Cooper's Hill, near Staines, in the attempt to discover whether the sun emits more light at one time than it does at another. Local atmospheric influences cause so many changes of temperature as to entirely mask changes which may take place in the radiation of the sun itself; for instance, the earth is nearer to the sun in our winter than it is in our summer, consequently receives more of the solar radiations in the winter, of which the Southern Hemisphere gains the chief benefit, yet by instrumental means this additional reception of heat by the earth in the winter has never been indicated.

Ten years ago the British Association, at the recommendation of the late Dr. Balfour Stewart, appointed its Solar Radiation Committee, to endeavor to obtain evidence by instrumental means of the variations, if any, in the light and heat emitted by the sun. There has been great delay in its getting to work, much of it due to the lamented death of Dr. Balfour Stewart, and much of it to the devising, construction, and verification of apparatus to do hitherto unattempted work; the result of this is that the regular instrumental work is but just upon the point of beginning, under the superintendence of Professor Herbert McLeod. The President of the Committee is Sir George Stokes, so noted for his discoveries in fluorescence, and a first-rate authority on the subject of light.

The instrument to be used consists of a solid copper cube 31/2 inches square, with holes bored partly through it from the top for the insertion of mercurial thermometers; when these were used, the space between each bulb and the surrounding copper was filled with precipitated metallic silver; now the mercurial thermometers have been abandoned and thermal couples substituted, in order to obtain continuous photographic records in an adjoining building. A horizontal hole in the face of the center of the copper cube permits the sun's rays to enter and to fall upon the face of another thermal couple whenever the hole is uncovered. What is required to be known is the difference in temperature of the latter thermal couple when the solar radiations fall upon it, and the temperature of the copper cube as revealed by the other thermal couples. The copper cube is covered with felt, three-eighths of an inch thick, and the whole inclosed in a tightly fitting brass box with walls one-eighth of an inch thick. Thus the whole of this part of the instrument is 4 inches square exteriorly. The holes already mentioned are continued through the felt and the case, and that which allows the rays of the sun to fall upon the central thermal couple is closed with a thin plate of transparent quartz, to keep out air draughts. The whole is equatorially mounted, and driven by an astronomical clock, to keep the face of the instrument constantly facing the sun. Some leading-in wires connect the thermal couples with reflecting galvanometers inside the building, and the indications are automatically registered in the usual way, by means of sheets of photographic paper upon revolving drums. The whole apparatus may possibly be in regular work by this time, for some weeks have elapsed since I went down to Cooper's Hill College to see it in its then transition state.

Disturbances due to local atmospheric causes can only have their effects eliminated after years of work, and that, too, by different instruments at different elevations, in different parts of the world, so this is but the beginning of a long and difficult research.

#### RESEARCHES ON PHOTOGRAPHIC PLATES.

On January 8th, Mr. Sterry read a paper before the Royal Photographic Society, in which he detailed a long course of his experiments with photographic plates, verified at every stage by tests upon the Hurter & Driffield system; his results were set forth by the aid of diagrams and numerous tables of figures. He said that a standard plate would be more useful to photographers than a standard light, and that it could be used to check the standard light. standard plate had been introduced by Mr. A. Cowan into plate testing, and had been in constant use by him for three years to check the light; experience showed that these standard plates did not vary much in one or two years, and that the effects of those variations were easily eliminated in practical work. testing plates, before a certain degree of development is reached, it is useless to take readings. The amount of moisture in the plate, gelatine being a hygroscopic substance, affects the sensitiveness; much more silver is thrown down by the developer in a given time, when the plate is wetted between exposure and development; the wetting permits reduction to go on more rapidly and to a greater depth in the film. A thickly coated plate is less rapid than one which is thinly coated. By the action of bromine upon a fully exposed plate reversal can be imitated; by dipping different parts of a fully exposed plate four different times into bromine—I suspect that he meant a solution of bromine in water and then developing, there is more and more imitation reversal, according to the length of the bromine treatment. When photographic plates are exposed at the back, instead of at the front, they are considerably slower, so need longer exposure. The presence of moisture in the film retards reversal. In any system of testing by means of standard plates, to secure uniformity, those plates must be thoroughly dry.

A week or two previously Mr. Child Bayley read a paper before the London and Provincial Photographic Association, setting forth, by means of measurements on the Hurter & Driffield system, that thickly coated plates give a longer range of gradation and retard reversal more than do plates thinly coated with the same emulsion and at the same time.

#### SILVER PRINTING ON METAL PLATES.

The full text of Mr. Léon Warnerke's paper, summarized in my last, has since been printed, and it seems that he has had difficulties connected with the amount of citric acid in the developer, since in his early patent he recommends 4 parts of that acid in his formula, and now he recommends but I part, and that one has to be neutralized, when the development has been prolonged, by a minute quantity of weak solution of ammonia. This is in accordance with the common experience that when gelatine has had too much alum added to it, which has to be corrected by the addition of a vegetable acid, a very little acid will go an exceedingly long way; the addition of acid is easily overdone. The image upon the plate is not fixed in the usual way, with hyposulphite of soda, as the hyposulphite dissolving the silver haloid in the emulsion would

silver the plate, which is not desirable. The screen he used in producing the metal block for printing the likeness of Sir Henry Wood was one made by Levy, of America, having one hundred and thirty-three lines to an inch. The screen consists of two plates, ruled each in different directions, and cemented together so as to form practically one piece of glass; it is placed in a special carrier in the dark slide, and in contact with it is put a sensitive plate. He uses ordinary gelatino-bromide plates; in this case it was one of a batch made by Mr. England. To illuminate the portrait he used his favorite magnesium lamp, and he finds that the interposition of the screen between the plate and the transparency increases the exposure necessary by about three times. For producing the negative, which he passed round for examination, 30 inches of magnesium ribbon were burnt, half on one side of the frame, and half on the other; lens, f/11. It is very important that the glass screen should be perfectly clean, as the network is so fine that the slightest dust upon it will render good results impossible.

Many of the manipulations do not differ from those of the carbon process.

#### COLOSSAL GLASS PLATES.

America is the country of big things, and occasionally we read about gigantic portraits taken in the United States direct in the camera. Should plates of sufficient size for this kind of work be running short, the following item of news may be of interest: A few days ago I saw a crowd around the tailors' shop of Messrs. Smith & Sons, 20 Gracechurch street, London, gazing at a sheet of plate glass covering the whole face of the shop. A bill in the window set forth that it is the largest sheet of glass in the world, and that it measures 255 by 114 inches, weighs over 1 ton, is nearly half an inch thick, and has a superficial area of 202 square feet. It took the united efforts of forty men to fix it in position.

## PROFESSOR LANGLEY'S EXPERIMENTS.

One of the most important papers read at the recent meeting of the British Association at Oxford was by Professor Langley, of Washington, who, by means of an excessively delicate bolometer and photographic recording apparatus, constructed at the expense of the Government of the United States, has succeeded in mapping the lines in the invisible region outside the red end of the solar spectrum, six times farther than has been done by photography, and he has thereby discovered more than two thousand new lines, the meaning of which it will take many years for men of science to unravel. Many European scientific men of celebrity were present at the reading of the paper, and spoke in the highest terms thereof; Mr. Norman Lockyer remarked that it amounted to quite a revelation. Lines due, not to the sun, but to the absorbing influence of the atmosphere of our earth, are most plentiful near the red end of the spectrum, and the United States Government hopes that some of the newly discovered lines will help to give more accurate information about coming atmospheric disturbances. W. H. HARRISON.

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All matter for insertion in the March issue of the Bulletin, all advertisements and matter connected therewith, must reach us not later than February 18th.

#### A PLEA FOR HARMONY.

NOTICE that a writer in "The International Annual" makes a plea for harmony in color and composition; and his points are well chosen and well sustained. However, there is another application of the term, which deserves no less attention. Not only should there be harmony in the composition, but harmony among the composers. What right or reason have we for the jealousies, the unfriendly rivalries, the harsh criticisms, and the other unfraternal discourtesies which all too often creep to the surface and display themselves on the pages of photographic publications, at the exhibitions, at the clubs, and elsewhere? Art is often lauded to the skies for its refining and ennobling tendencies; but it does, in some cases, seem as if it failed to have the expected effect. Perhaps we expect too much of it, without taking into consideration the crude and unfavorable specimens of human nature with which it has to contend. Do the competitive exhibitions, by appealing to the vanity, the selfishness, and the other baser elements of our characters, do more harm than good; or do they only bring more to a focus and develop that which already exists?

Amateurs especially ought to be on the most friendly terms; for what class of men have more in common, and can be more mutually helpful? Each one has nothing to lose and much to gain by following the golden rule. If, for nothing else, the League of Amateur Photographers ought to commend itself to every camerist as a possible promoter of that fraternal feeling which ought to exist.

We are not all so constituted, or so situated, that we can see or do alike; and, as we, each one, claim the right to think and act as we please, photographically as well as otherwise, let us cheerfully and good-naturedly allow others the same privileges, so long as they break no moral laws. If one wants fuzzy pictures and gets them, let him enjoy them without abusing those who do not like them, or being abused in return. Let us give candid, honest opinions according to our light when necessity requires, but give them kindly, and with the understanding that we have no patent on truth, and that our judgment is not necessarily supreme. Brethren, let charity prevail.

G. M. GILES.

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# THE KALLITYPE PRINTING PROCESS.

AT a recent meeting of the Photographic Society of Japan W. K. Burton and T. Kondo demonstrated the Kallitype printing process.

The demonstrators stated that they considered this process to have certain advantages over any other. They would not compare its general merits with those of the platinotype process, which latter they considered the first of all processes, but it (the Kallitype process) had certain advantages of its own. It was cheap, was easily worked, and was the only process they knew giving a visible image that would give a true black print from a thin negative and that seemed suitable to almost any kind of paper. The process depends on the fact that ferric oxalate is sensitive to light, being changed thereby into ferrous oxalate, which latter salt has the power of reducing various metallic salts, nitrate of silver among the number.

The process is a very old one, but that worked by the demonstrators was a

modification of a recent form thereof, introduced by Mr. O. P. Bennett. The following is a description of the process:

#### SENSITIZING SOLUTION.

Ferric oxalate	75 grains.
Silver nitrate	30 "
Water	I ounce.

This solution is swabbed over the paper with a wad of cotton wool. The coating is, of course, made as even as possible, but streakiness that cannot be avoided does not, as a rule, show in the finished print. The paper is dried in front of a clear fire before the solution has time to sink into it.

Paper so prepared will keep for several days in any ordinary wrapping; for months in a calcium tube.

The quantity mentioned is enough to coat about 10 square feet of smooth paper, 5 feet of extra-rough drawing paper.

#### PRINTING

is done in the ordinary printing frames, the time taken being about one-third that needed for albumenized paper. The image is visible, and has the exact appearance of the image in the platinotype process—in fact, it is of exactly the same nature—and any one accustomed to platinotype printing can readily judge when the paper should be taken from the frame.

#### DEVELOPER.

Rochelle salts	I ounce.
Saturated solution of borax	10 ounces.

#### RESTRAINER.

A 1 per cent. solution of bichromate of potassium.

The effect of the restrainer is very marked. Without any of it the prints are liable to be "muddy" and to have impure whites. The least that is needed is 7 or 8 minims to each ounce of solution, and no more than this should be used for negatives such as are suitable for printing with albumenized paper or such as are at all hard. In printing from thin negatives, restrainer up to the extent of 30 minims per ounce may be used, the exposure being correspondingly increased. In this way it is possible to get brilliant prints from negatives too thin to give such by any other process.

The image develops from a pale yellow color to a full deep black in a few seconds; but if the print be at once removed from the solution it will be found that the high lights are yellow. It must remain in the solution, for at least a quarter of an hour. It is to be observed that no further actual developing action takes place during this time. Though the developer can be altered to suit different negatives, or even, to a certain extent, to compensate for error in exposure, the result cannot be modified in any way when once the print is in the developer.

In using smooth paper, a number of prints may be developed in the same solution, pouring the developer into a measuring glass as soon as one print is developed, placing an undeveloped print on the top of this latter, and returning the developing solution, the prints being afterwards kept moving just as in the ordinary toning process. In using very rough paper, however, this procedure is

not permissible, as the image gets rubbed from the tops of the rugosities of the paper, with the result of a mottled effect.

After development the prints are washed in three or four changes of water, and are then placed in the

#### FIXING BATH

consisting of a r per cent. mixture of strongest ammonia and water, where they remain for about a quarter of an hour. Washing for half an hour completes the process.

A number of samples of work on different kinds of paper were shown, some being on common cartridge paper.



# THE DEVELOPMENT OF GELATINE DRY PLATES.

THERE has probably been more written on the subject of development since the sensitive dry plate has been brought to the photographer's aid than any other subject in photography, from the days when gallic acid was used in combination with nitrate of silver to the present time, when the alkaline pyrogallic developer is almost universal, every plate-maker having special formulas.

The object of the present article is to place before the readers of the BULLETIN two developers that have proved in the writer's hands well suited for any kind of gelatine dry plate, the "Climax" in particular.

A very useful and efficient appendage for developing purposes may in the first place be described. Procure an ordinary clean earthenware teapot, remove the lid, and tie over the top two or three thicknesses of cheese cloth allowing the center to hang into the interior in the form of a bag. This is to act as a strainer, to pour the developer through each time a plate is developed; so that each time some of the previously used solution is required, it may be poured from the pot quite clean, and freed from dust particles, and the staining film of oxidized pyrogallol, which always takes place if the developer stands in an exposed vessel for a short time.

Developing Solution No. 1. - Make a saturated solution of common washing soda by adding boiling water to the soda in a wide mouth, moderate-sized bottle, shake well and allow the solution to get cool. Make up also a saturated solution of sulphite of soda in another bottle and allow to cool. These being ready, pour into a glass graduate some of the plain soda solution, and test its strength by means of the little instrument known as a hydrometer, and add cold water until the instrument floats at 60. Take 20 ounces by measure of this solution, and add thereto 20 ounces by measure of the sulphite of soda solution, the strength of which has been reduced to 40 according to the same instrument, thus making a total of 40 ounces of the mixed soda solutions. Now make up, say, 8 ounces of pyrogallic acid solution in another bottle with clean cold water, to register 18 on the above instrument, and add thereto 20 grains of oxalic acid; shake until dissolved. To make the developing solution, take ½ an ounce by measure of the pyrogallic solution and 4 ounces by measure of the mixed soda solutions; add thereto 12 ounces of cold water. About 3 ounces of this solution will cover a plate  $6\frac{1}{2} \times 8\frac{1}{2}$  inches in a suitable pan. Now, for instantaneous exposures in the studio this developer leaves nothing to be desired. Should,

however, the exposures be in the least prolonged, then this developer must be restrained, which is best done in the following way:

Make up the following, which may be called Developer No. 2:

Pyrogallic solution, 1 ounce; the mixed soda solution, 1 ounce; solution of bromide of potassium (1 ounce of potassium bromide in 12 ounces of water), ½ ounce; sulphite of soda solution (indicating 40 by the test of the argentometer), 2 ounces; cold water, 8 ounces. If restraining is required, add 1 or 2 ounces of this solution to the developer, or pour the developer into the tea pot, wash the plate well, and pour on the last-named solution. Any required density can then be obtained; in fact, by mixing No. 1 and No. 2 solutions in varying proportions, any required degree in soft or dense negatives can be obtained. No. 2 developer is admirably suited for the production of very brilliant transparencies. Each plate should be developed in a separate pan, so that each may receive treatment according to the exposure. The mixed developers may be poured into the tea-pot and used many times over, until the solution becomes too much discolored.

Fixing may be done in a plain hyposulphite of soda solution, 6 ounces of hypo to 20 ounces of water; after fixing, the negative should be washed and laid in a concentrated solution of chrome alum, rocking the dish to and fro for about a minute, then washed again and allowed to stand in running water for half an hour.

If these directions are carefully carried out and the process of development attended to with that care so necessary for the production of good work, it will be found that every range required, and every quality desired, can be obtained in the production of negatives, either for Aristo, albumen, platinum or carbon.

Alfred J. Jarman.

#### STUDIO LIGHTING.

THE following article by Valentine Blanchard, reprinted by us from Autotype Notes, will be found valuable to both professional and amateur.

"The light must fall on the sitter and not on the camera, and, therefore, every means possible must be adopted to bring about this end. When once this principle is well fixed in the mind, the carrying it into practice is only a matter of detail, which, of course, must depend upon the form of the studio itself. is also another point of almost equal importance: All direct light over and above the amount necessary to illuminate the sitter and the background tends to weaken the gradations of tone on the features and to produce flatness. knowledge of this fact will enable the operator to modify his light according to the particular requirements of the model. For instance: The arrangement of light necessary to do full justice to the features of a smooth-skinned blue-eyed blond would be totally unfit for the successful rendering of the face of an elderly man with time-worn furrows everywhere, and perchance with the battle marks of that fell enemy smallpox, in addition. In this latter supposed case, an increase in the area of light will help to flatter, for stray reflected light would lessen the force of the principal light, and, in consequence, would help to fill up the cavities. The contrasts of light and shade would be diminished, and the result would be more satisfactory.

"In studios of limited dimensions, and with the glass very near the sitter,

the light is much more cutting, so to speak, than in one of vast proportions and with the glass far removed. Of course, in the former the exposures are much shorter than in the latter. But rapidity is not everything, and quality stands first.

"Once upon a time I glazed a studio with rough or fluted glass. The results were perfect, but it was in the days of wet collodion, when exposures were counted by minutes rather than seconds, and I was compelled—most reluctantly, I must confess—to remove the light-spreading rough glass, and replace it with ordinary clear glass.

"The most delicate and flattering effects are to be produced in a studio glazed with ground-glass. The light is broader in effect, and, in consequence, the shadows are not so cutting and hard. The difference between ground and clear glass is so marked that I should never hesitate to employ the former had I occasion to build a new studio.

"It must not be forgotten, particularly in large towns, that while in a newly constructed studio glazed with ground-glass, as suggested, the average exposures, under all the varying conditions of light in this most variable climate of ours, would not be longer than those in an ordinary well-lit studio, yet when dust and smoke had done its work upon the rough surface of the glass, there is a strong probability that the exposures would be very much lengthened unless the greatest pains were taken to keep the glass clean. It is well to remember this, otherwise disappointment might be the reward of any one who might be tempted to re-glaze his studio with ground-glass. The same objection, of course, applies to framed blinds made to slide inside, and covered with papier-mineral, or with the tracing linen employed by architects. When quite fresh they are perfect; but after a time the accumulation of dust on the upper surface very considerably obscures the light, and the exposures are lengthened in consequence. Moral: They must be frequently dusted, or renewed in order to get the best results from them.

"Any one who enters a painter's studio for the first time cannot fail to be struck by the soft agreeable light that illuminates the model. Of course I am speaking of one of the lofty studios employed by painters of the first rank. reason for this beautiful soft light is not far to seek. The studio is so lofty, and the glass, in consequence, so far away, that the light is filtered, as it were, before it reaches the sitter. The glass is after all only a semi-transparent material, and it follows that when so far removed from the sitter, the effect is much the same as ground-glass when placed much nearer the eye. There is also another reason for this agreeable effect. The light is so high up that it does not get into the eyes of the beholder to upset his judgment. I remember an eminent portrait painter who once brought a sitter to be photographed, because he could not spare time for the number of sittings usually required by the artist, being completely upset by the photographic studio light. I did my best to arrange the light to resemble as much as possible the illumination of his own studio, which I knew very well. When I had done my best, I pulled forward a very tall screen, and placed it so that though it did not cut off any of the light destined for the sitter, it took off all the light from his eyes. When this arrangement was complete, and I had placed him on the spot intended for the camera, he exclaimed: 'Ah! that will do at last, I think we may now proceed to work.' The light on the sitter had not been altered at all. I had merely furnished him

with the power to see in his accustomed manner when at home in his own studio. That was all.

"Now the moral of all I have written, if there be any moral at all, is this: Train your eyes to see after the manner of the best artists, and then, no matter what the form of the studio, you can, with more or less difficulty, according to the circumstances of the case, make your studio help you to artistic results."

# LANTERN SLIDES, HOW TO MAKE AND COLOR THEM.\*

4-3.

BY DWIGHT LATHROP ELMENDORF.

#### CHAPTER I.

TWO methods of making lantern slides will be carefully described. The first will be called the "contact method," which consists in printing on prepared sensitized glass, just as if it were paper. It is done by placing a negative in an ordinary printing frame, and then adjusting the gelatine surface of a prepared slide plate directly against the image on the negative, and keeping it in firm contact with the latter by means of the springs of the pressure board of the printing frame, while actinic light is allowed to shine through the negative upon the slide plate. The thicker portions of the negative stop the light to a certain degree; therefore, there is little or no chemical action upon the corresponding parts of the slide plate, while the thinner portions allow more light to pass; therefore, there is more action upon the corresponding parts of the slide, so that the chemical action of the light upon the various parts of the slide plate depends upon the thickness of the respective parts of the negative. Moreover, it also depends upon the length of time that the light acts upon the plate.

The exposure may be so long that too much action takes place, even under the thickest parts of the negative, so that the delicate gradations of action, so much desired, are completely lost, and the picture is seen through a veil of haze called "fog." Some have called it "atmosphere." Well, the atmosphere is sometimes "foggy"; but there is a difference between the natural and the chemical.

When a plate has been over-exposed—that is, exposed too long to actinic light, it invariably begins to change or "come up" as soon as it is thoroughly wet by the developer, and the developing action is often so rapid that no amount of manipulation can save the picture. In slide work it is only a matter of a few moments to make another and a shorter exposure; therefore much time and expense are really saved by refraining from tinkering with the developer or the over-exposed plate.

If it were a negative, and another exposure were impossible, any kind of dodging would be allowable, but it is "love's labor lost" on a slide. Then, again, the exposure may not be long enough for a sufficient amount of light to pass through any parts of the negative except the very thinnest. This is called under-exposure, and is much worse than its opposite. In this case the plate will lie in the developer for a long time before any change whatever is seen, and

<sup>\*</sup> Commenced in the January issue. Copyrighted, 1894, by E. & H. T. Anthony & Co.

after it begins it will proceed so slowly that three or four slides, properly exposed, could be made and developed before the under-exposed one is nearly so, and even when this state does occur, if it ever does, the slide had better be converted into a cover glass at once; otherwise it will be nothing but a failure in "black and white."

The author is unacquainted with any method that will produce a suitable deposit on an under-exposed plate, either a negative or a slide. It is trying to create, and that is impossible without divine power. A slight over-exposure may often be restrained by plunging the developing plate under very cold water and leaving it there until another very weak and cool developer, containing proportionately a large quantity of potassium bromide, is prepared for it. This method is very valuable for negatives, but is not advised for slides, because a better general average will result from the use of one standard developer, unchanged or unmodified, changing the time of exposure to suit the negative and the developer. There are enough variable quantities to guard against without adding still another.

Experience, although the most expensive, is the best of teachers; therefore allow it to lay down the following digest of twenty-one years' work.

#### Use:

First.—A standard negative.

Second. - A standard slide plate of one kind.

Third.—A standard actinic light.

Fourth. - A standard developer.

And change none of these invariables in the contest with the variable:

- (a) Time of exposure.
- (b) Temperature.
- (c) Period of time the plate is in the developer.
- (d) The mental state of yourself.

Have all things clean, darkroom, apparatus, plates and solutions, and especially your hands.

Don't be in a hurry; if you haven't time enough to make a good slide, it is better not to make any.

# REQUISITES FOR THE "CONTACT METHOD."

- 1. A controllable source of actinic light.
- 2. A means of measuring the time of exposure.
- 3. A lamp which yields non-actinic light.
- 4. Lantern slide plates.
- 5. A printing frame.
- 6. Trays for the various operations.
- 7. A camel's hair duster.
- 8. A measuring glass or graduate.
- 9. A glass funnel.
- 10. Absorbent cotton.
- 11. A means of washing the plates.
- 12. A plate rack.
- 13. A  $\frac{1}{4}$ -inch flat camel's hair brush for the red prussiate of potash solution.



NGRAVED BY THE HAGOPIAN PHOTO-ENGRAVING CO.

MADE WITH ANTHONY ELECTRIC LIGHT APPARATUS. BY GEORGE H. HASTINGS, BOSTON.

NEGATIVE ON CLIMAX PLATE.

LIBRARY OF THE UNIVERSITY OF ILLINOIS

- 14. Lantern slide mats.
- 15. Gummed strip of paper for binding the finished slides.

## CHEMICALS REQUIRED.

- 1. Developer.
- 2. Potassium bromide.
- 3. A bottle of acid sulphite of soda.
- 4. Hyposulphite of soda.
- 5. Powdered alum.
- 6. Red prussiate of potash.

All of these articles may be obtained from the publishers, and all except the developer may be obtained anywhere. Formulas for developers will be given later.

Each article will now be described in detail.

1. The most convenient source of actinic light is the incandescent electric lamp, which can be turned on and off, at pleasure.

Next in value is a gas-jet, controlled by a ratchet device and lighted by an electric spark. One pull of the pendant chain turns on the gas and lights it at the same time.

A second pull shuts off the gas, and, of course, extinguishes the light.

This apparatus, while it is admirably adapted to the purpose of exposing slides, is rather expensive; for, in addition to the jet itself, which costs \$1.25, a spark coil (\$3) and a battery of three or four cells (50 cents per cell), are necessary.

The most convenient battery is the "dry" form of cell. The whole apparatus costs about \$6. This is the form of actinic light used by the author, and it leaves nothing to be desired. Any length of exposure may be obtained with the utmost ease. It has never failed; and when the gas is turned off, the light is entirely extinguished.

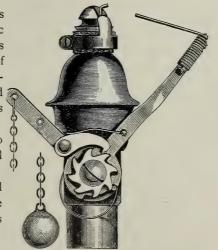
Another form of jet, while not equal to the first in every respect, is quite well adapted to the purpose,

It is a gas-jet with a "by-pass," screwed upon a small iron stand, which may be connected with any gas fixture by means of rubber tubing.

The flow of gas is controlled by a stopcock, which is connected with a very small "by-pass" tube at one side. The gas is first turned on and lighted as an ordinary jet.

As the stop-cock is turned, it opens the by-pass tube so that a very small flow of gas escapes at the orifice and is lighted by the main flame just before the latter is extinguished. This little by-pass jet continues to burn as long as the main jet is turned off.

When the main jet is gradually turned on, it is lighted by the small jet, which is completely extinguished when the main jet is full on.



There are two slight objections to this burner:

In the first place, the by-pass flame, although small, gives off some actinic light; therefore it is best to keep the burner at some distance from the developing table.

Secondly, it is liable to go out entirely if the stop-cock is turned with a sudden jerk. It is also liable to be blown out by the slightest down draft. If gas is not within reach, a kerosene lamp will answer, if it is placed in a light-tight, not air-tight, box, having a swinging door which may be easily opened and closed.

The author does not believe in "make-shifts" of any kind.

As a last resort, the lamp used for developing may be arranged with a swinging door, so that one source of light may serve the two purposes; but it is preferable to leave the developing lamp undisturbed.

2. The simplest and most convenient method of measuring the exposure to actinic light is by means of an ordinary cheap metallic clock, which has a good, loud tick that may be easily heard all over the darkroom. The author uses a 79-cent clock, which ticks four times to the second. It is placed on a shelf directly under the exposed gas-jet and measures off quarter, half, or full seconds with unchanging accuracy, without requiring much mental strain on the part of the operator. The tick of the clock will enable one to repeat an exact exposure on any number of plates.

It is a very bad plan to trust to one's own sense of time in exposing lantern slides.

3. A good lamp for the developing table is an absolute necessity. A small one is an abomination for slide work. One of the best on the market is Carbutt's "Multum in Parvo," which can be very much improved by removing all the glass it contains and substituting ruby glass at the sides and an 8 x 10 "dark amber" glass in front, which should be backed by a piece of plain ground-glass of the same dimensions.

The addition of the ground-glass will surprise those who have never tried it, as it gives a diffused light that is delightful to work by. The slightest change in the plate can be detected at once, and, moreover, more light can be used without danger of fogging the plates than is possible without the ground-glass.

Instead of the kerosene lamp a gas burner upon a small stand which is connected with a gas pipe is used. A controlling stop cock is placed outside of the lantern so that the light may be increased or diminished at pleasure without opening the lamp.

- 4. For slide plates the author prefers Carbutt's and Cramer's.
- 5. One or two printing frames with the pressure board backed with black broadcloth which does not fray easily.
- 6. Four trays are required, two large enough to hold two  $3\frac{1}{4}$  x 4 plates conveniently. These are to be used for developing only.

Deep white porcelain trays are recommended because they form a good contrast to the plate as it develops, and they show dirt when there is any.

A third one large enough to hold four slide plates is used for the hyposulphite of soda solution only, and the fourth, a tray of equal size for the alum solution only. These trays should be used for the purposes indicated, respectively, and for nothing else.

To avoid the misuse of a tray, it is a good plan to mark each one. The gold paint liquid sold in all paint shops answers this purpose better than anything else. It resists the action of photographic chemicals for a long time and is plainly visible in ruby or amber light.

7. A good camel's-hair duster is a sine qua non. It should be at least 2 inches wide.

It must be washed first with soap and water and then with a little soda and water, after which it should be held under the tap until all soap and soda have been washed out; then partially dried with a clean towel and hung up to dry spontaneously in some place free from dust.

The fingers should never come in contact with this brush. A duster which has been in contact with the human skin will leave upon the plate that which is much worse than dust. In this connection remember that a finger mark upon a slide is not a beauty spot, even if made by a pretty finger.

8. A measuring-glass or graduate—an 8-ounce one will answer. The ordinary thick precipitating jars are just the thing for holding developers in use, as the liquid may be decanted, leaving the particles of dirt and gelatine upon the bottom.

They do away with the necessity of filtering the developer frequently.

- 9. One or two quart glass funnels, to be used with paper or absorbing cotton, as filters.
- 10. Absorbent cotton is very useful as a filter, and for swabs for swabbing of plates, as will be described.
- 11. A good wash-box for thoroughly washing the plates after they have been fixed. The permanency of the slide depends partly upon the thoroughness of the final washing.
  - 12. A rack for holding the plates while they are drying spontaneously.
- 13. The use of the small camel's-hair brush will be described in its proper place.
- 14. Lantern slide mats are pieces of black paper  $3\frac{1}{4}$  x 4 inches, with an opening cut out of the center. The openings are of various shapes.
- 15. For gummed paper the author uses Sheplie gum paper, which works better than anything else on the market, and, being of a light color, the name of the slide can be written upon it.

# CHEMICALS AND PREPARATIONS REQUIRED.

1. Developer. A bottle of Anthony's improved hydroquinone developer, which comes prepared in 8 and 16-ounce bottles.

This developer is an admirable one for slides. It is clean, does not stain the fingers much, has wonderful keeping qualities, and will make as fine a slide as any developer the author is acquainted with.

Tom, Dick or Harry may have just as good a one, but the following directions are based upon this developer and upon the Carbutt or Cramer plates, and the author will shuffle off any and all responsibility if any others are used. No one can make a perfect negative or a perfect slide every time, so don't expect to.

At the close, formulas will be given for those who desire to work out their own salvation.

- 2. An ounce bottle of potassium bromide. Take an empty ounce bottle, fill one-fourth of it with bromide crystals and then fill up with water. Shake it thoroughly; if all the crystals dissolve, put in some more and shake again. In a short time one can be satisfied that no more crystals will dissolve. When this state of affairs is reached, the solution is said to be "saturated." And a saturated solution of the bromide is what is wanted. Mark the bottle "bromide solution." It is used in connection with the developer.
- 3. The acid sulphite of soda is used in connection with hyposulphite of soda.
- 4. A solution of hyposulphite of soda commonly called "hypo," or the fixing solution.

Take 8 ounces of hypo, put it in 32 ounces of water and shake until the crystals are dissolved, then add half a drachm of the acid sulphite of soda.

Mark this bottle "hypo solution."

The acid sulphite keeps the hypo solution clear, so that there is no danger of staining the plates. A very small quantity is sufficient, too much is an evil. Hypo is very cheap, so don't work it to death. A fresh solution should be made every day or two if many plates are fixed, and a fresh solution is always safer even if only a few plates are to be fixed. Never use it if the solution is yellow or brown.

(To be continued.)

# LANTERN SLIDES BY ARC LIGHT.

**4**3.-

T HAS been very interesting to note from time to time in the BULLETIN the results of the use of the arc light in studio work. Recently this form of illumination has been receiving especial attention, and its employment seems to be on the increase. Though working on a different line, that of the employment of photography for purely scientific purposes, I have finally been led to the use of the arc light, to the exclusion of the flash light, and even sunlight. it is especially in the making of lantern slides that I have found the arc light to be of such great service. In lecturing on electrical subjects before classes, I have discarded all forms of illustration save the lantern slide. These have been taken from the cuts in books and periodicals, as well as from original drawings, and the collection includes, not only pictorial subjects, but letter-press data, such as tables of figures. I have always found it a comparatively easy task to make a satisfactory lantern slide from a landscape negative, or such negatives as are ordinarily employed for lantern work, in comparison with making a really good slide from a printed drawing or page. This forms a branch of photography almost distinct in itself. Here the great desideratum is a perfectly black-andwhite negative, for the slide should be intensely black in its lines, with a background of perfectly clear glass. Usually either the background is clouded or the lines weak. Then, again, the camera is vastly more sensitive to the finish of the paper of the page, and its color as well, than the eye. In such work speed is also a great consideration, for necessity demands that such slides be made by

Experience soon showed that even a very strong direct light of a gallery could not be depended upon for the required density, for such work requires



## PHOTOGRAPHY AND THE PRINTING PRESS.

THE BULLETIN has noticed the rapid growth in late years of photoengraving as a business. The simplification of the half-tone process brought about in this country is the chief reason for this, though the improvements in the manufacture of paper and inks, as well as presses, are also factors. It is now possible for many of our professional photographers to do as such men as Kurtz, of New York, and Gutekunst, of Philadelphia, have done. That is, bring printing presses into their establishments, and control the big business there is in making from their original negatives plates of some kind that can be used in a printing press. The money is to be made now in large editions only, and there is no reason why the photographer should not control the complete output of prints from his original negatives, whether these prints are made by photography, or through the medium of the printing press.

Our esteemed contemporary, the *Photogram*, has, like ourselves, added a department of "Process Work" in recognition of the demand from photographers for practical information as to how their negatives can be utilized in the printing press. Our transoceanic friend embraces all photo-engraving and collotype methods in the single word "Process," and says: "Process work is an enormous power which we cannot afford to ignore. It is mainly in the hands of the printers, and because it has not yet, to any extent, touched portrait photography, most photographers have denied it consideration. But process is only in its infancy; yet, even in infancy, it has struck one blow at commercial photography, and a blow more severe than even process workers dreamed of some two or three years ago. A couple of years back, the great British view publishers recognized that collotype must eclipse their business.

Hence two or three, in self-defence, took up collotype work.

"The recent introduction and immense success of the American albums of the world (this time in half-tone) have struck another blow, and within the last few months a large view publisher, recognizing that his occupation must soon be gone, converted part of his factory into process works, and is successfully pushing for zinc-block business, in line and half-tone. And process will not stop at the view publisher. Process is now going a step further. As we write, printers in London and Edinburgh are running night and day on magnificent half-tone albums of celebrities. Sixteen large and beautifully executed portraits for six pence will flood the market, probably before these lines appear; and we shall not see the end of the movement until every portrait that is worth publishing has been published in this, or better, form.

"Process, every process, is working in two directions. It is becoming more

perfect every day, and it is becoming cheaper every day. It is now worth while to use a process block for thousands of copies; to-morrow it may be worth while to use it for hundreds. The next day it will be worth while to make a cabinet block and give a hundred impressions, superior in many respects to your silver prints, at the same price that you charge for a dozen. And though process firms are to-day springing up by dozens; though old ones are enlarging their premises, increasing their staffs, and multiplying their output, the time will come when they will be hunting work, and you will have to compete, not with the little photographer over the way, or in the next street, but with great business houses backed by ample capital and the best administrative ability.





SWELLED GELATINE BLOCK.

[From the Photogram.]

HALF-TONE BLOCK.

"For the man who will squarely face the facts and grasp the future, the outlook is all hope. Process to-day is employing more photographers than were engaged in the whole photographic craft in 1870. And process to-day is paying better average wages than the assistants of 1870 dared to dream of. Process in ten years will employ more photographers than are now engaged in the whole of the craft, and they will probably have much more permanent work and higher wages than the assistants of to-day."

We congratulate the editors of our wide-awake contemporary on their fore-sight, and also compliment them on the bright and breezy style in which they treat photo-process subjects. Their typographic make-up is excellent, and they have, indeed, earned the success they are receiving. We purpose giving the photographers of the new world all the latest developments in process work, as the *Photogram* does to our British neighbors, and if we gather some new ideas from our contemporary we hope to repay them with interest.

#### REFERENCES NECESSARY.

The photo-engraving business, like the applications of electricity, has developed so rapidly that help has been hastily hired without sufficient consideration of their fitness for the work. Later, these inefficient assistants are dismissed, only to apply somewhere else as competent workmen, and if they are possessed of sufficient assurance they will succeed in getting positions that more experienced operators are better fitted for. There is no term of apprenticeship required, and, at present, injury is done, both to employers and employed.

If employers would but insist on references and then examine into them carefully, the business would soon be rid of a number of parasites that are but adventurers or tramps. Two experiences of my own will illustrate this. I was impressed with the intelligence of an oily tongued operator once who came to

me without other than verbal references. Soon after employing him he showed a letter he had received stating that his mother was dead in a fardistant city, and asked that sufficient money be advanced him to go there to her funeral. He never returned, and it was afterwards learned that he was a forger and ex-State prison bird who made a business of burying dead mothers in different cities. other case was of a shy young man, who came with a most excellent reference from a Boston photo-engraving company, that expressed great regret at losing his services. As the young man was shabby in dress and unprepossessing in appearance, I insisted on his telling why he should strive for a position in New York instead of remaining where he was known and appreciated. He con-



From Electric Light Photo. by G. G. ROCKWOOD.

fided to me that he had contracted the gambling habit in Boston and came here to get away from his associates. He turned out to be a first-class workman in every way, and it was the reference he carried saved him from becoming a tramp, when I met him, for appearances were certainly against him.

For the protection of all concerned, recommendations should be given to deserving workmen, stating their ability, integrity, term of service, and reasons for quitting work. Then if men are only hired whose records are clear, the standard of operators will be raised and impostors will be exterminated.

#### BUSINESS PROSPERING.

Photo-engravers have already experienced the revival in trade after a couple of years of depression, and the future is most encouraging. The demand now is for a higher grade of work, necessitating more skilled workmen and more improved apparatus. But, best of all, there is a willingness on the part of pub-

lishers to pay higher prices for the slightest improvement in the work. One of the leading firms in photo-engraving states that the outlook for big business and better prices was never so good as now. As an indication of improved conditions, they say that customers who formerly complained about prices, owing to the senseless competition that prevailed, do not question the price now, but are most particular in regard to the quality.

The facts are, that the publishers of photo-mechanical pictures are more critical now than formerly. The competition among them at present is to excel. As the privilege of illustrating is open to all, it becomes a question of artistic judgment and technical knowledge in criticising the picture to be used and the reproduction of it. Then readers have become connoisseurs, and will buy only the books and magazines, or notice the catalogues or circulars, that possess merit in their illustrations. This uplifting of public taste in effects pictorial and the increasing demand for only the best pictures can be attributed almost entirely to the education which the camera brought to the amateur photographers and their friends. Credit should also be given the professional photographer, for he has improved his art until photographs of "living pictures" have become equal to the painter's ideals.

Photography has made us a picture-loving people, but to bring our best work before the greatest number the medium must be the printing press. Hence the revival in the photo-mechanical trade, and the reason that the BULLETIN devotes its pages, not only to the best methods of obtaining pictures through the camera's aid, but also as to the latest improvements in processes for circulating them in permanent printer's ink.

#### TRICKS IN ALL TRADES.

"In ways that are dark
And tricks that are vain
The heathen Chinee is peculiar,
The same I now rise to maintain."

And the same could be maintained regarding the photo-engraver who will paint ink on solid portions of a cut with a brush before proving, or who will have skilled artists touch up proofs with a pen or brush before sending them to customers. He knows this to be a fraud and that the customer cannot afterward obtain such effects from the block. It is a dishonest procedure in every way, and it is the duty of customers to cease dealing with engravers who practice it. Painful as it is to make this exposure, it is to be hoped that those "whom the cap fits will wear it."

#### PHOTO-ENGRAVERS' ROLL OF HONOR.

REFERENCE has been made before to the revolution that has been wrought in paper, pressand ink making, and in book, magazine and paper publishing through the improvements in photo-engraving. Little, however, is known of the men who, by tedious experiment and often with little pecuniary reward, have worked out these results. The benefits accruing from their labors spread from this country to the older ones, and is now felt around the world. Some of these men are buried in the great business houses that have been built up on their

skill. We shall mention but a few names now without disclosing their locality: Frederick E. Ives, Hugh L. C. Stevens, Charles Wright, Mr. Fernold, John Ryan, Theodore Vreeland, W. H. Bartholomew, Joseph Tryon, William R. Shugg. They constitute a roll of honor placed on record here, and to be added to from time to time.

#### PHOTO-MECHANICAL PRINTS RECEIVED.

A FLOWER piece in colors, from five typographic half-tone blocks, is received from Mr. A. Wild, of Buffalo, N. Y. The effects are laboriously worked out, and we can see nothing novel in the production.

The Autocopyist Co., of London, send some fine collotype prints printed from bichromatized gelatine paper. This sensitized paper, after being printed under a reversed negative and washed, is stretched on a special frame, inked, and the impression is taken in an ordinary copying press. The system is ingenious and simple, and likely to win favor with amateurs.

Thanks are returned to the many photo-engravers who have expressed an interest in this department and kindly offered engravings to illustrate it. As our space is limited we can only publish such engravings as possess some novel feature, or are in some way of photographic interest, and these will be printed with due credit, no matter how crude they may be.

#### PROCESS POINTERS.

Pure zinc and pure copper give the cleanest photo-engravings. Fourteen or sixteen-gauge zinc should be used, while with copper sixteen to eighteen gauge only is required.

The enamel solution can be used on zinc as well as copper, only that after development the enamel coating should be treated for several minutes with an almost saturated solution of common alum. This hardens the glue, and it is not necessary to bake it to such a degree in order to make it resist acid.

Excellent line work is now made with the enamel solution as the protective covering for the top of the lines, while dragon's-blood powder brushed four ways against the sides of the lines, as in zinc etching, prevents the sides of the lines from being attacked by the mordant after the first biting.

There is an association in London of photo-process and general engravers, together with electrotypers and stereotypers, organized to watch their general interests in the way of legislation. If there were only such an organization here, the words, "engraving and etching" would not remain long omitted from our present copyright law.

The square stop is the best one for all around half-tone work. We have experimented with diaphragms of every conceivable shape in varying sizes, and though some of them are valuable in special cases, it was found the only improvement on the round diaphragm was the square one.

## A NEW PROCESS LENS.

Mr. H. Dennis Taylor has exhibited béfore the Royal Photographic Society a new photographic lens which is said to possess a special capacity of producing a plane image of a plane surface, and an image free from chromatic and spherical aberration. Tests were made with this lens of a screen 4 x 3 feet,

covered with lines, and on focusing it was found that if the center was focused sharply, the margins were equally well defined. The best focus for the margins was also the best focus for the center. The new principle which Mr. Taylor claims for this lens is the discarding of the diaphragm entirely for producing flatness of field. He says: "I discard the old diaphragm corrections entirely, and throw the whole burden of flattening the final image and correcting the marginal astigmatism upon a negative lens whose diaphragm corrections are also eliminated." He dispenses with flint glasses also on account of their tendency to a yellow color. Our fear regarding the new lens is that it is quite long in focus, and that what has been gained in flatness of field is lost in speed. It is to be hoped we are mistaken. Up to the present time there is no lens to excel the rapid rectilinear Dallmeyer for photo-mechanical reproductive work.

STEPHEN H. HORGAN.

# TINT GRATINGS IN PHUSOCHROME WORK.

A NATION'S standing is not measured by the greatness it has seen, nor the mill wheel turned by the water that has passed; neither can the preëminence attained by American workmen in the half-tone engraving process be maintained except he is alive to the existing weakness and demands of the three-print color system.

Whether we view such color work now being produced, as the original Ives' method, or an European failure with a new name, the fact remains that it is a very incomplete and crude tool, as it now stands, with which to obtain passable results in color reproduction.

The ruled screen grating was an absolute necessity for obtaining monochrome typographic printing blocks, the tonalities or differential shades in such being obtained by the relative size of the stipple or structure of the image, passing from the solid block through the different gradations to pure white.

Our color reproduction is a different matter, however, and calls for an entirely new arrangement when we desire to faithfully delineate all subtle shades and tints of the colored original, the colors of the lesser order of such an original having their full and true value only when reproduced as structureless on the paper as those obtained by the artist with his brush, *i. e.*, solid.

It is here that the three-print typographic color method of to-day is entirely wanting, and a failure in every respect. As the lighter shades of any color are only obtained by a greater or lesser admixture of white, thus the whole soul and life of any colored work of art is found completely eaten out when a copy produced by such a method is compared with the original. To attempt the delineation of atmospheric grays, or that soft aerial quality which is the very essence of color work, would be futile, an impossibility; this fact being the more noticeable to the observant when they consider that the work hitherto done in this line is entirely of the yellow, red and blue variety.

To those desiring to enter upon or improve this state of affairs, let me advise the securing of a tint grating, such a grating being obtained from a grained litho stone as the foundation.

The writer in 1885 had a series of such screens made, and for half-tone monochrome work either typic or litho, were excellent. The art was not far enough advanced at that time, however, to perceive the full value of such work,





LIBRARY OF THE UNIVERSITY OF ILLINOIS and the finer ruled screen gratings now sold fulfill every requirement regarding detail and softness of outline.

The legitimate field, however, for these tint screen gratings is in the new three-color typic work. It requires no lengthy dissertation on my part to point the fact that greater solidity in all the lighter shades and tints will be secured through the closer and more homogeneous nature of tint grain in such a screen. The gratings I speak of were made in this manner. A picked litho stone was grained as fine as possible, then worked over in a uniform level tint. From this, proofs were pulled, copied in the camera, and screens made therefrom. If smaller grain is desired, the pulled proof is transferred to another fine-grained stone, thus making the tint very fine.

Pictures produced by such screens were mistaken by artists for original crayon work, the firm who first received transfer from me by this method being Armitage & Ibbitson of Bradford, England, somewhere in 1885 or 1886.

MACFARLANE ANDERSON.

# JOTTINGS FROM GERMANY.

Platinum Paper and Warm Development.—Baron von Hübl discusses the development of platinum prints with warm solutions. As every chemical process proceeds more quickly and uniformly at a high temperature, so the development of the platinum image is greatly facilitated by heating the developing solution. Although this method involves a little extra trouble, the prints by hot development possess certain qualities which in many instances will justify the expenditure of the extra time and labor. The cold development methods furnish brilliant prints, and good pictures may be obtained from comparatively weak negatives. For warm development dense strong negatives with deep shadows give the best prints. By this method successful prints may be obtained from negatives which will not yield satisfactory prints by the cold development process.

Of particular interest is the color of the prints and their tendency towards brown shades. To brighten the shadows, a small addition of potassium chlorate is recommended. An excellent process is the printing upon pure iron paper and development with the platinum solution. The consumption of platinum is small, development with a brush requiring only a few cubic centimeters of solution. Prints made by this method have clear deep shadows and pure high lights, the half-tones show the same soft gradation as in hot development, but the color of the image is always black.

Fixing Bath with Alum and Citric Acid.—Citric acid tends to prevent the formation of the precipitate which often forms in the alum hypo fixing bath. The following formula is published in Photo. Mittheilungen:

I. Alum	
2. Sulphite of soda	
3. Hypo	

Use three parts of No. 1, three of No. 3, and one of No. 2.

To Arrest Development.—To stop the development of a negative suddenly, without fixing it, it is only necessary to place it for five minutes in a solution of I part of cadmium bromide in 15 parts of alcohol. The plate becomes absolutely insensitive to light, and may be kept for months before being fixed.

The Hardening of Some Collodion Papers. - J. Gaedicke, in Liesegang's Photo. Almanac, writes that some of the collodion papers found in the market are subject to hardening, or become horny, in course of time. This is noticed particularly when such papers are toned in the combined toning and fixing bath. Papers that are comparatively fresh change their tone in about thirty seconds to a vellow-brown, and may be toned in from five to seven minutes. But paper that is several weeks old tones more slowly, several minutes often elapsing before the vellow-brown tone appears and the tones are sometimes not uniform, but in streaks. These streaks do not disappear again, and the toning often takes about thirty minutes. In this long period the hypo will exert a reducing action on the picture. It is evident that the solution does not sufficiently penetrate the The particles of the colored silver compounds are so tightly encased in the collodion that the gold compounds of the toning bath do not have free access. The film, which when comparatively fresh is easily penetrated by water, has become hardened and repels water. The cause of this is the loss of the glycerine which is added to the emulsion to keep the pores open. If an emulsion is made without glycerine, the hardening will at once take place.

To follow the process of hardening by observation, some collodion mixed with glycerine may be poured upon a glass plate and, when dry, exposed to the air. Glycerine does not form any chemical compound with the pyroxyline. We have simply a mechanical mixture. We have a film of pyroxyline containing numerous fine drops of glycerine, something like a sponge, the pores of which are filled with glycerine. Changes of temperature cause a collecting of the glycerine on the surface, for as soon as the plate or paper is colder than the surrounding air, it will dampen slightly. The hardening of collodion paper is best retarded by keeping it in a place of uniform temperature, though not too dry.

This trouble is rarely experienced by photographers in this country. Our frontispiece is made on Aristo, Jr., paper, which may safely be purchased in quantities sufficient to last several weeks.

# OUR ILLUSTRATION.

Our frontispiece is furnished by John Rösch, of White Plains, N. Y., and is printed from negatives made on Cramer Crown plates, with a Dallmeyer rapid rectilinear lens, and a Prösch shutter. In a former issue Mr. Rösch described the methods employed by him, and which contribute largely to his success.

The prints are on "Aristo, Jr.," to which frequent reference has already been made.

#### SOCIETIES.

THE COLUMBIA CAMERA CLUB OF ASTORIA, ORE.—Organized November 22, 1893. Has been admitted this year to the American Lantern Slide Interchange. Officers: President, W. A. Sherman; Vice-President, N. W. Troyer; Secretary, W. Timson; Treasurer, G. W. Lounsberry.

MYSTIC CAMERA CLUB.—At a meeting of this Club held January 4th, the following officers were elected: President, J. F. Wade; Vice-President, C. A. Clark; Treasurer, J. B. Thaxter, Jr.; Secretary, W. M. Archibald; Executive Committee, E. B. Conant, C. A. Staniford and J. M. Foster.

BOSTON CAMERA CLUB.—Details of lantern slide contest come to hand,

"With a desire that the interest and activity in slide-making may be continued, the Lantern-Slide Committee, as a prize competition, propose the following:

"Four negatives of different qualities have been selected, from which each competitor must submit one slide from each.

"Each set thus entered will be submitted to three members, who will be selected to act as judges; and a prize, to be decided upon later, will be given for the best set.

"For full particulars in regard to this competition, members are requested to consult the bulletin board at the Club rooms.

"All slides for competition must be left at the Club rooms, addressed to the Lantern-Slide Committee, not later than March 1st; and all members intending to compete are requested to notify the Committee as early as possible."

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.—At the regular monthly meeting, held January 8th, Dr. Janeway read an interesting report from the Committee on Science and Art to which further reference will be made. Mr. A. Moreno demonstrated the application of the electric arc light to portraiture.

BUFFALO CAMERA CLUB.—The Buffalo Camera Club at present is making arrangements for an event which will afford lovers of fine photography an opportunity not often met with under such favorable conditions. *The Illustrated Buffalo Express* has placed in our care a generous selection from the pictures entered for competition in its last amateur contest, and on the evening of January 19th our rooms will be open for members and invited guests to view perhaps the largest and most varied collection of prints ever brought together under similar conditions.

This special exhibition will give an opportunity to examine work of amateurs ranking in ability from the veriest tyro to the accomplished expert. It will embrace productions of all grades of merit, and contributed from nearly every State in the Union, and since no restriction was placed upon subject-matter or size of picture, it may reasonably be expected to embrace a greater variety of subjects and show a more varied scheme of treatment than any similar amateur photographic contest heretofore conducted upon similar lines.

On Friday evening last, at the regular bi-monthly meeting, the conversation was upon the matter of printing and paper, mostly confined to results rather than to methods, since most of the members present were familiar with the various simpler processes.

Prints upon ordinary albumen and collodion, upon celerite and platinotype, and upon the various matt surfaces, both collodion and albumen, were shown.

Mr. John B. Newman showed prints of the same picture upon the four papers—and for depth of tone, brilliancy of contrast and fineness of gradation in the various tones, we thought that the "Aristo," both with burnished and matt surface, showed marked superiority over the others.

Mr. Lewis V. Cock, whose native modesty deprives his brother amateurs of much information which he might impart. showed some bromide enlargements from  $4 \times 5$  to 10 x 12 made in the large camera belonging to the Club.

Inasmuch as none of the others present had attempted similar work we were well pleased with his explanations, and were it not for that very same innate modesty I should have enclosed one of his prints.

Mr. Conrad L. Baer, whose pictures find great favor with the *Buffalo Express*, exhibited one of his latest sunset views. His work in this line is a source of wonder

and admiration to his friends; and the more so for the reason that his pictures of that character are in fact studies and not the result of any haphazard snap-shot work. He is to be congratulated that this is the case, and when we see one of these views we call to mind how much it represents in what might be termed as accessories before the fact; it being well known only to the few that he carefully determines, sometimes long beforehand, upon the point of view, and then patiently awaits the favorable opportunity and the proper conditions to catch that fleeting evanescent condition, aerial perspective.

Some very good results were shown by other members in the line of indoor portrait work, where source of light is a small window, and long exposure is necessary. Among the pictures was one by one of our latest members, Mr. William J. Hayes, and it showed the result of careful study and the effect of ingenious application of simple arrangement of a white sheet.

We expect very much from Mr. Hayes, just as soon as he embraces further

opportunities and enlarges the scope of his work.

I trust, dear Editor, that you may find a little something in this letter which by the aid of your shears and mucilage may find place in your BULLETIN, so letting others know that our Club is thriving in members and growing progressive and aggressive along popular lines of work.

W. J. HASKELL, Secretary.

INDIANA ASSOCIATION OF PROGRESSIVE PHOTOGRAPHERS.—The Convention will be held at Indianapolis, Ind., commencing March 5th, and lasting until March 8th. This being the first convention held by Indiana photographers, every one in the State should attend. Entrance fee, \$2; dues, \$1 per year. No charge for entry for competition. Prizes will be awarded in the following classes: Class A, six pictures, 13 inches or larger; Class B, twelve pictures, Paris Panels to 13 inches; Class C, eighteen pictures, anything under Paris Panels; Class D, Commercial Work, six pictures, any size; Class E, Architectural Views, six exterior views, any size; Class F, Interiors, six pictures, any size; Class G, Landscape Photography, six pictures, any size; General Class, two pictures, 13 inches, or larger, on any paper.

MINNEAPOLIS CAMERA CLUB.—At the regular January meeting of the Board of Directors of the Minneapolis Camera Club, there were three active members elected. Mr. A. L. Eidemiller, who has been Secretary of the Club since its inception until the present year and Vice-President this year, handed in his resignation, to take effect at once, as Vice-President, as Chairman of the Lantern-Slide Committee, Local Director of the American Lantern-Slide Interchange and member of the Auditing Committee.

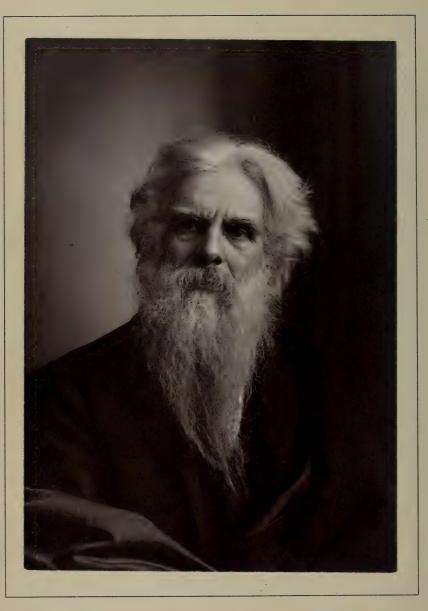
The Board was loth to accept Mr. Eidemiller's resignation, as he has been, and is, the most enthusiastic member, but his business relations were such that he was obliged to take the step.

Mr. W. B. Augir was appointed to fill the vacancy on the Auditing Committee. The Vice-Presidency was left open till the next meeting, while C. J. Hibbard was appointed to fill the vacancy in the Lantern-Slide Committee, and act as Local Director of the American Lantern-Slide Interchange for the balance of the year.

43

At the South Kensington Museum, London, an interesting experiment is being carried on. A picture gallery has been lighted so as to shut out the most important actinic rays. It is contended that, while the rays that cause the paintings to fade are excluded, the effect of white light is obtained. The method adopted is the glazing of a skylight with alternate layers of green, blue and yellow glass. The gallery has been visited by artists who are of opinion that the pictures therein exhibited are seen in their true colors. As for the public, they have not the slightest idea that there is any difference between the lighting of this and the lighting of any other gallery.—Photographic News.

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"ARISTO-PLATINO" PAPER.

STUDIO WORK.

# ANTHONY'S

# Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

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No. 3.

# PHOTOGRAPHS IN NATURAL COLORS—McDONOTYPE PROCESS.

WCH has been written and promised on the subject of photography in colors, but specimens recently shown to us seem to indicate that the time is not far distant when both professional and amateur will be in possession of a process by which the desired end may be easily gained, and this without any radical departure from present methods. Somewhere in April, 1892, we were favored by a visit from Mr. James W. McDonough, of telephone and telautograph fame. that occasion Mr. McDonough showed us some recently granted patents for the obtaining of photographs in natural colors, and, granting that certain obstacles could be overcome, we realized that the problem of the reproduction of objects in colors closely approximating the originals was solved, and that this method was one that admitted of practical application in every-day photography. On February 11th and 12th, of this year, Mr. McDonough again visited us, and demonstrated clearly that the bulk of the obstacles had been satisfactorily overcome, showing us results of such a nature as to convince us absolutely that this process has a great future, and that there is no doubt but that any object can be reproduced with great facility in the colors of Nature.

Mr. McDonough's process requires a specially ruled screen and specially ruled paper. A multi-colored screen, ruled by very fine alternate lines, or formed of dots or small particles, is employed. Fundamental colors of the spectrum are preferably used, say orange-red, a yellowish green, and a violet-blue. The screen is ruled with lines in these colors, about three hundred lines to the inch. This screen is placed in front of, and in close contact with, an orthochromatic plate, which latter is then exposed in the camera to the object to be photographed, and a black and white negative is ultimately obtained in lines

corresponding to the screen in register. From this negative a positive is made in the ordinary way, on glass or paper. If now the screen, or a similarly ruled one, be laid on the positive, and moved until the positive and screen are in register, the picture comes up in the original colors.

This positive may be printed direct upon paper ruled or lined in the same colors as the screen, and registering, of course, in color and form with the same. It may be printed in a printing press from one half-tone plate, upon paper ruled with colors in the same manner as the screen, but preferably lighter in tint.

Two of the screens were examined by us, and were apparently transparent celluloid, with nothing to indicate any ruling except a slight purplish tint. Ruled papers were also examined, and were apparently white. Of particular interest was the following. Unrolling a small Japanese scroll, Mr. McDonough pointed out the various tints, and then exhibited what was apparently an ordinary black and white transparency. After examining scroll and transparency an apparently clear piece of celluloid was handed to us, and was placed in contact with the transparency. Moving the celluloid a little, the transparency suddenly became a mass of color, reproducing exactly every shade of color present in the Japanese scroll. The celluloid was a ruled screen, and the transparency had been made from a negative made through this ruled screen. Of considerable interest, also, were two portraits of Mr. McDonough, in which the white cravat, colored tie, flesh tints, in fact everything, were marvelously rendered. It is a startling experience to back a transparency with an apparently clear piece of celluloid and find the transparency changed into a lifelike reproduction of the original.

To the capabilities and possibilities of this process of Mr. McDonough's it seems impossible to set a limit. It will be remembered that but one camera and one exposure are required, and that from one negative any number of pictures may be printed. The following applications occur to us now:

First.—It may be used in any photograph gallery for the production of portraits.

Second.—It may be used in any hand or tripod camera.

Third.—It will be found invaluable in commercial photography to show the patterns and colors of rugs, carpet, wall-paper, china, dress goods, furniture, etc.

Fourth.—It may be used in landscape photography.

Fifth.—It may be printed with one half-tone plate in a printing press, with printer's ink, for magazine illustration, book work and general advertising, one impression only on properly ruled paper being required.

Sixth.—Lantern slides.

Seventh.—Fac-similes of oil paintings.

Eighth.—In general scientific work.

For the benefit of the professional photographer, who cannot fail to be interested in a process which may soon be in great demand, we would point out that the procedure is the same as in ordinary photography, except that a specially ruled screen is used directly in front of the plate, and that a similar screen or specially ruled paper is used with the positive. We do not expect to be able to give further information on this matter until May; we would, however, refer our readers to the parallel column which appears in another part of this issue of the Bulletin, where comparison is made between a published account of Dr. Joly's researches in 1894 and those for which Mr. McDonough's patent was granted in 1892. The coincidence is remarkable, and the fact that Dr. Joly endorses the method should further strengthen belief in the capabilities of the process. We believe, however, that Dr. Joly will admit that his work has been somewhat anticipated by Mr. McDonough.

# PHOTOGRAPHS ON THE EUROPEAN PLAN.

PHOTOGRAPHERS have to suffer much from price-cutting, and will be interested in the following scale of prices, adopted by Van Loo & Trost, of Toledo, O. We reproduce in full the circular sent out by this firm:

"The scale herewith submitted will give you our prices on fine cabinet photographs and explain our present system, which has received the endorsement of our customers the past two years. The leading photographers throughout the United States are rapidly adopting the same.

"It enables us to furnish the highest grade of work at the lowest possible price. It places the cost where it belongs, viz., those who get the most pay the most.

"Any impression that our cut in price from \$6 to \$3 per dozen is a cut in quality of our work is an error. On the contrary, we are furnishing finer pictures, mounted better, every picture enameled, and finished the finest that science and skill permit.

"Those who desire to try several styles will find the price nominal for each additional sitting.

"As time is a great item of expense, we require payment in full when sittings are made, and as we devote our entire time to the proper finishing of work, we will not be able to open an account or to render bills. This is an accommodation to us which we trust you will not object to—we are saving you \$3 on every dozen cabinets.

"Other styles and sizes of work equally low in price under these condi-

No. of Proofs Made.	No. of Proofs Finish'd		or i ab.	For 6 Cabs.		For 12 Cabs.	
I	I					\$3	00
2	I	\$2	00	\$3	00	4	00
2	2			4	00	5	00
3	I	3	00	4	00	5	00
3	2			5	00	6	00
3	3			6	00	7	00
4	I	4	0	5	00	6	00
4	2			6	00	7	00
4	3			7	00	8	00
4	4			8	00	9	00
DUPLICATES: 1, 50C. 3, \$1, 6, \$2, 12, \$3.							

tions. Do not neglect yourself or family by not having a first-class picture. We suggest appointments for sittings, when possible to make them."

# THE PRINTING PROCESS OF TO-DAY.

THE printing processes that may be adopted by the photographer are so many that the beginner often finds himself in doubt as to which he shall give the preference. The professional photographer, too, has the claims of various papers thrust upon him, and is tempted in various ways to experiment with materials of unknown composition and of doubtful permanency. It may be permissible for the amateur to dabble with untried products; their lack of permanency will not involve him in many difficulties. But, all other things being equal, we doubt not but that permanency will be considered a very desirable quality. The professional photographer, however, whose reputation and patronage depend upon the absolute permanency of the prints for which he receives pay from his customers, cannot afford to run the slightest risk, and must, therefore, be fully aware of the nature of the materials he uses and fully convinced of the permanency of his productions. There has lately been some discussion as to the relative merits of gelatine and collodion papers, and quite recently a photographer, who made good ferrotypes but is hardly to be looked upon as an authority on dry-plate matters, has lauded a printing-out paper which possesses the doubtful merit of cheapness, but which is untried, and cannot be classed with either gelatine or collodion, as it is dubbed an entirely new product.

Our own experience with gelatine Aristotype papers is of such a nature as to warrant us in advising the professional photographer to carefully look over some of his work of a year or so ago and compare it with older prints on albumen paper, which the said gelatino-chloride

paper was to eclipse in the matter of permanency.

In "The International Annual" of some few years ago the frontispiece was an actual photograph printed on gelatino-chloride paper, and in every case that has come under our observation the print is yellow and absolutely ruined. These prints were carefully made, and the mounts were the best obtainable. Other prints made by us two or three years ago, especially to test this point, are in the same condition. These, also, were carefully made and mounted with pure paste on good mounts. The prints, too, have not been subjected to any prolonged action of the light or to any undue influences. Many cases have also been brought to our notice where professional photographers have had to replace prints that have thus "faded."

However, we do not desire our readers to accept our own evidence unsupported, and would call their attention to the fact that the majority of the prominent professional photographers in this country are not using gelatine printing-out papers. It is a fact worthy of attention that of the one hundred and eighty-nine exhibits at the Photographers' Association of America, but seven were on gelatine papers, and at the Photographers' Association of Ohio only three out of sixty exhibits were on such printing-out papers.

Such a showing can but indicate that a great majority of the best-known men in the profession is against gelatine papers.

But with collodion papers a very different aspect of affairs is presented. At the exhibitions mentioned above, two hundred and thirty-three exhibits were on one brand of collodion paper, obviously demonstrating that collodion papers are greatly in favor to-day. Our experiments with this latter printing-out paper have given results absolutely favorable. Prints that have been exposed to every unfavorable influence are just as good to-day as they were when made.

There is, indeed, little doubt as to which paper should be used by the photographer. It is a case of doubtful against positively permanent. In the *British Journal Almanac* for 1895, E. W. Foxlee writes on "The Printing Process of the Future—What Will It Be?" With his remarks, which are here reproduced, we heartily coincide, and would urge our readers to give them careful attention:

"The above is certainly a speculative question. The carbon and the platinotype processes we have had with us respectively for thirty and twenty years, and they have securely established themselves, both on account of the permanence of the results and the effects obtainable with them. I fear, however, at least for some time to come, that their employment will be restricted, as at present, to the higher classes of work. My query really applies to the general run of every-day work—cabinet and carte-de-visite pictures—as turned out from moderate and low-priced establishments; for it is those that actually issue the largest number of prints.

"Until quite recently, albumen ruled supreme for popular work of the above class; but when gelatino-chloride paper was introduced at a low price, many thought that albumen was forever doomed, not on account of the quality of the pictures it yielded, but by reason of their fugitiveness. With the newcomer great permanence was promised, and that, no doubt, induced many to adopt it. Those who did so were not long in discovering that it was not all plain sailing; but the troubles of the paper need not be enumerated, they are so well known. They would, however, have been tolerated had the promise of stability been fulfilled, but it has not. I venture to say that, although gelatinochloride has only been in vogue for two or three years, there are, in that short time, more gelatine prints in existence with brimstonecolored lights and bilious half-tones than there are albumen ones made in any similar period, and kept for so brief a time. This many photographers of repute know to their cost, and not a few of them have gone back to albumen. If the question of the future lay simply between gelatine and albumen, I think the latter might well take a fresh lease for a good long term. But I do not think it does, for we have another candidate in the field, an old and tried friend, rejuvenated—collodion.

"The collodio-chloride process was introduced some thirty years ago, and soon proved itself capable of yielding the finest results, and, as time, the only real test, has proved, stable ones. It may naturally be asked why this process, if it is so good, lay dormant so long. I shall not attempt to reply, but may suggest the following as some of the reasons: Faith in albumen was stronger thirty years ago than it is now. The emulsion had to be made by the user, and a suitable paper for its

support was not readily obtained. If the collodio-chloride paper were purchased ready-made, it had to be obtained from abroad, and its cost—about 40 shillings a quire, if I remember rightly—was prohibitive. If the emulsion itself were purchased, its price was also very high. However, one photographer, whose name and work is well known, Mr. George Bruce, of Duns, took it up, and has employed it exclusively in his daily work for the past twenty-five years, and I believe I am correct in saying that fading pictures are unknown in Mr. Bruce's practice. We are now getting collodion paper, both of home and foreign productions, in the market, at little more than the price of albumen or gelatine papers, so that cost no longer stands in the way.

"Collodion paper possesses many advantages over gelatine. Like albumen, it does not require a special type of negative. It may be toned in almost any bath. Any color, from a red brown to a deep rich purple black, or even a cold black, can be obtained at will. It does not yield double tone, and vignettes with pure whites can as easily be obtained as with albumen paper. The prints can be blotted off and dried before the fire without risk of injury. Collodion, unlike gelatine and albumen, does not form a compound with the silver, therefore the results are more permanent than can be claimed for any other silver process, as time has proved.

"An old adage says, 'It is never wise to prophesy unless you know.' I shall not, therefore, predict that collodio-chloride will be the silver process of the future, but simply content myself by saying that, with its advantages as compared with gelatine or albumen, it deserves to be."

## ITEMS OF INTEREST.

N the British Journal Almanac for 1895 Mr. Thomas Bedding urges I the professional photographer to look into the merits of stereoscopic portraiture as a means of stimulating business. "I argue that professional photographers would experience little or no difficulty in popularizing portrait stereographs among the general run of their sitters, and I feel sure that the attempt has only to be made to result in success. As regards practical work, the main thing to avoid is too great exaggeration of relief by having the lenses (if two lenses are used) too far apart. A mean separation of 21 to 3 inches would probably be found advisable. At the latter separation, having the camera 7 or 8 feet from the sitter, I find I get a perfectly natural effect, using lenses of 5-inch focus." Our professional photographers are perhaps not aware of the return to popularity of stereoscopic pictures. Stereoscopic photography has returned, and is here to stay. It behooves the profession to seize every opportunity for catering to the public taste. We would recommend those interested to invest in a copy of F. Drouin's book, "The Stereoscope and Stereoscopic Photography," and to read J. Traill Taylor's article on "Stereoscopic Photographs with a Single Camera" in "The International Annual" for 1895.

For drying film negatives, J. Pike recommends a small three-fold screen, made of thin, soft wood, such as is used for backing picture frames, covered with blotting-paper and hinged with linen. The films, after the glycerine bath, are wiped between folds of linen and pinned to the screen.

4-A.

The rubber tubes used on many shutters often adhere so strongly to the metal parts as to be only removable by the aid of a knife. If powdered tale be applied to the rubber, this difficulty will be obviated.

**6** 

The following table, showing the amount of light reflected from various substances as compared with that which falls upon their surfaces, is given by Dr. Sumpner, and will be found of interest:

White blotting paper	82 per	cent.
White cartridge paper		"
White tracing cloth		
White tracing paper		6.6
Ordinary foolscap		6.6
Newspapers 50 to		6.6
Yellow wall paper		6.6
Blue paper		"
Dark brown paper		6.6
Dark chocolate paper		66
Planed deal, clean 40 to		"
Planed deal, dirty	20	6.6
Yellow painted wall, dirty		6.6

WE learn, from the English journals, that, through the Royal Photographic Society, a set of standard screw fittings has been forwarded to the Photographic Section of the American Institute. Our lens manufacturers will do well to seriously consider the advisability of adopting the English standards.

**6** 

At a London theater, the audience was photographed between the acts. It is said that "the whole of the audience stayed in their places and received the addition to the programme with hearty applause." Possessors of a Williams' flash machine would do well to investigate this as a lucrative source of income. Managers would hardly object to affording every facility, and the advertisement and pecuniary returns to the photographer would be considerable.

40

We regret to have to record the death of Commandant H. Fourtier, a regular contributor to "The International Annual." With the tidings of his decease came a copy of his last book, "Les Lumières Artificielles en Photographie," published by Messrs. Gauthier-Villars et Fils.

Mr. Bolas will soon deliver two lectures on "The Physics and Chemistry of Development," before the Affiliation of English Photographic Societies. It is to be regretted that our own societies do not encourage more of this sort of instruction, and combine to pay for a series of lectures by authorities. The Photographic Society of Phila-

delphia or the Society of Amateur Photographers of New York should take the initiative in such a movement.

**6** 

ONE of our contemporaries would do well to exercise a little more care in proof-reading. In a recent issue a four-and-a-half page article, copied from an English journal, was printed twice under a slightly different heading.

The Royal Photographic Society, of London, England, which became incorporated on the first of January in this year, have determined that the Society shall hereafter consist of two classes, Members and Felows. In future, no members will be admitted to the fellowship until they have given the Council satisfactory proof of the possession by them of suitable qualifications for the title F. R. P. S., which, in this way, will become a guarantee of distinct ability on the part of its holder in either scientific or artistic photography. The large accession of members to the Society within the past few months has rendered its migration to larger and more convenient premises imperatively necessary, and the Council have this matter now under their consideration.

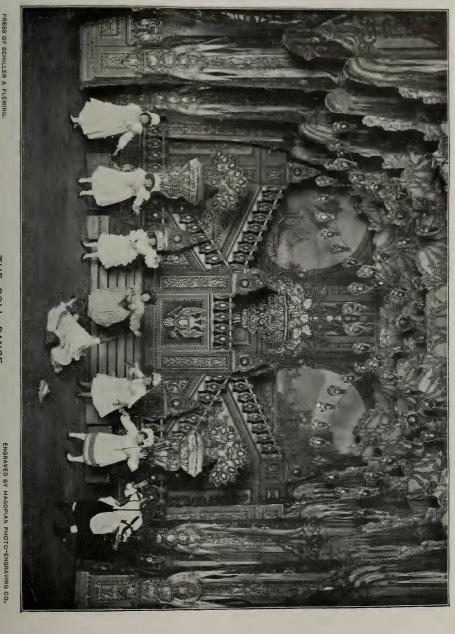
W. P. Buchanan's annual lantern slide show was an immense success. The Grover cat was greatly in evidence, and the silver souvenirs will be treasured as reminiscences of a really jolly evening. Friend Leach, who is always on hand on such occasions, informs us that this show eclipsed all others. Mr. Leach is a good judge of these matters.

The application of acetylene as an illuminant was the subject of a lecture before the English Society of Arts. Professor Vivian B. Lewes gave some interesting details, not the least important being the fact that the gas may be generated from solid rods of calcic carbide, by merely plunging these latter into water. It is said that a light of twenty candle-power may be obtained from a pound cartridge or stick of calcic carbide, placed in a strong steel cylinder 4 inches in diameter and 16 inches long, which in water generates its own gas, and that this light can be burned at the rate of ½ cubic foot per hour for ten hours.

Through the kindness of Mr. L. F. Woodward, of Battle Creek, Mich., we have received a copy of the Bulletin, dated September, 1857. At that time our publishers were located at 308 Broadway. The copy before us is a pamphlet of twenty-four pages, and contains two full-page illustrations, and many names that will be familiar to our older workers. Among others we note C. D. Fredricks, J. Gurney, A. Gardner, Faris & Irwin, E. Long and John Esmay.

Mrs. Charles Fisk, Wonewoc, Wis., would be glad to hear news of her son, Elmer Fisk, who disappeared January 28, 1893. On that date he is supposed to have left Cashton, Wis., to proceed to his home,

FROM 18 X 22 NEGATIVE, MADE WITH WILLIAMS FLASH MACHINE. DISTANCE FROM FLASH TO STAGE, 100 FEET. HEIGHT OF STAGE, 37 FEET; WIDTH, 50 FEET.



LIBRARY OF THE UNIVERSITY OF ILLINOIS being in delicate health, and has not since been heard of, although inquiries about him have constantly been made. He is 5 feet 11 inches in height, weighs about 160 pounds; complexion, light; smooth face; trade, photographer. If anyone has any information regarding him he will greatly help to relieve a mother's anxiety by writing to her at the address given on page 80.

"To know when to leave off should be the aim of the retoucher. He is the best artist who knows when his work is done. If as much time and thought were taken to get perfect negatives as is spent in correcting imperfections, the retoucher's art would come nearly to an end."

Messrs. CLEMENT and GILMER, of Paris, send a token of their good will, and the Vereinigte Fabriken Photographischer Papiere, of Dresden, send, in accordance with their annual custom, a wonderful tree cake, for which we extend hearty thanks.

We regret to hear of the illness of Mr. Washington Irving Adams, of the Scovill & Adams Co., but are glad to learn that he is well on the way to recovery.

Our congratulations to Mr. Alexander Clinton Wilmerding, of the Obrig Camera Co., on his marriage with Miss Katharine Rutgers Bache.

Seascapes are best taken when heavy clouds are about; a drop shutter exposure, with f/16, is about the exposure required.

When exposing with a cap, take it off with an upward movement and hold above the lens, it will then act as a sky-shade, and prevent too much top-light entering the lens.

When pouring from a bottle always hold the label upwards and grasp the bottle from above, not sideways. Stray drops will then run down the same track, thus preventing the hands or label becoming stained.

ROCKING the dish vigorously generally gives plucky dense negatives. On the other hand, if the dish be rocked slowly, a thin negative, but full of detail, is the result.

Hypo can be quickly dissolved by tying the desired quantity in a piece of muslin and suspending it half way down in a jug of water.

A DEVELOPER slightly warmed will develop much quicker than when cold. It must, however, not be made too warm, or the gelatine will melt.

Hypo is best kept in a saturated solution; use half this and half water for negatives; 1 part hypo and 4 parts water for prints.

# PHOTOGRAPHY IN LONDON.

BY W. H. HARRISON.

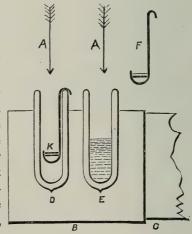
PHOTOGRAPHY IN LIQUID AIR.

A FEW days after my last communication was mailed to you, the 1895 session of the Royal Institution opened with a lecture by Professor Dewar, one portion of which lecture was devoted to the subject of photography at low temperatures. In this portion of his researches with liquid air, oxygen, and other gases, he is working in alliance with Captain Abney.

One of their comparative experiments may be explained by the aid of Fig. 1, in which D and E are two glass vessels with vacuum jackets; that is to say, that between the double sides of the vessels is an exceedingly perfect vacuum, more perfect even than that necessary for the finest radiometers. How this vacuum is obtained I can inform your readers hereafter, if the details have not already been published in American photographic journals. It has been discovered that radiant heat passes with extreme slowness through such a perfect vacuum, and that in vacuum-jacketed vessels liquid oxygen, and many other liquefied gases, will keep a long time before total evaporation takes place. When these jacketed vessels are bottle shaped, and their narrow mouths plugged with cotton-wool, liquid oxygen has been kept in them for more than three days and nights.

In the cut B represents a wooden box, blackened inside, with a sliding door pulling out at C. The jacketed vessels are supported in the

roof of the box, and their upper parts project into the air above it. The vessel D is open to the atmosphere; that is, to say, it is full of common air at normal temperature. The shaded portion in E represents liquid air. K and F are ladle-like vessels, each carrying a very small sensitive gelatine plate, with its coated side upwards; on this upper side is laid an opaque screen with a large hole in it, which acts as a window or negative, and with this arrangement the hole in the screen has to be photographed. Some 5 or 6 feet above the two glass vessels is an incandescent lamp, the rays from which fall nearly parallel in



the direction denoted by the arrows AA, upon the plates in the ladles; thus when one plate is in the vessel containing normal air, D, and the other in the vessel containing the liquid air, E, rays from the same source of light can be made to pass through the holes in the screens for the same time, and the disturbing influence which would be present in photographing through the double sides of two glass vessels, not precisely alike from a scientific point of view, is avoided.

Under these circumstances photographic images were obtained,

strong, of course, in normal air, but weak at such temperatures as 186 and 200 degrees below the zero of the Centigrade scale. When the ladle and plate F were first immersed in liquid air, the latter began to boil because of their comparatively high normal temperature; after a time this ebullition ceased, and then the exposures were made. Until these experiments with photographic plates were made, Professor Dewar was under the impression that all chemical action ceased before such low temperatures were reached, nor does he now accept the chemical hypothesis of the invisible photographic image; he said that the effect may be physical, and that we may possibly hereafter find that phosphorescence merges into photographic action. When photographic plates were at minus 200 degrees Cent., 20 per cent. of their original sensitiveness remained. Professor Dewar put some pieces of gelatino-chloride paper directly in front of the condensers of the electric lamp, and painted liquid air contained in a tuft of cotton-wool, over the papers at places, and wherever he so painted them they remained white because of reduction of sensitiveness by the cold; in other parts they darkened rapidly. With shorter exposures under the same conditions, and chemical development afterwards, it became apparent that similar reduction of sensitiveness had occurred wherever the liquid air had been applied.

At the same lecture he showed the brief phosphorescence set up momentarily in certain substances by these exceedingly low temperatures. One of the things made to glow phosphorescently was a linen shirt collar. He first exposed the collar to a strong arc light close at hand, then dipped it into liquid air until ebullition ceased, then drew it out quickly and exposed it to the arc light again for an instant, then exhibited it in its faintly luminous condition to those assembled in the darkened theater. The arc light was in a box, and so arranged that few of its rays found their way into the theater. The platinocyanide salts were shown to acquire remarkably high fluorescent powers under these conditions. Sir Frederick Bramwell presided at the lecture.

#### ARGON.

A few days ago the particulars about the new gas, and, perhaps, new chemical element, argon, were made known to the Royal Society by Lord Rayleigh and Professor Ramsay, and doubtless they will have been widely published in the American press before you receive this. It is an uninteresting heavy gas, having no affinity for any other chemical substance yet tried; but they have some hopes of being able to attack it with pure fluorine, so I say nothing more about it here. The Royal Institution and the Royal Society are different scientific organizations. The former was founded at the beginning of this century; the latter is nearly two hundred and fifty years old. It is the oldest scientific body in the world, with the exception of one at Rome.

# An Easy Method of Making Collodio-Chloride Lantern Plates.

Of revised formulas in relation to old processes there are no end, and novelties in this respect usually have no life unless they are put forward,

and reasons given, by a known safe and practical man. This was the case with a paper on collodio-chloride lantern plates, read before the London and Provincial Photographic Association, by Mr. J. S. Teape, who, moreover, introduced a distinct point of novelty in the use of common tough collodion, and not one with the rotten and tender variety of high temperature photographic pyroxyline in the collodion, hitherto, perhaps, universally thought to be necessary in the preparation of collodion dry plates. He used Hopkin and Williams "ordinary" pyroxyline at 14 pence an ounce, such as I suppose to be used by druggists for miscellaneous purposes outside photography. His formula for the emulsion is:

Pyroxyline (Hopkin & Williams ordinary)	32 orains
Ether (725)	3½ Ounces
Alcohol (805)	21 "
Chloride of zinc	40 croins
Nitrate of silver.	40 grains.
	92

Mr. Teape says: "Dissolve the chloride of zinc in the alcohol (and this is a valuable quality of chloride of zinc, that it will dissolve in the alcohol without the addition of water), put in the pyroxyline when soaked, add the ether, and shake. Now put the silver into a test tube, add 40 minims of distilled water. At this stage I prefer to use a non-actinic light. A single thickness of amber glass will do. There is no necessity for working in a dull light. We now dissolve the silver by heat over a spirit-lamp flame, and at the same time heat 6 drachms of alcohol in a small flask; when the silver is dissolved, add about a drachm of hot alcohol to it by degrees. Then add to your collodion, a drop or two at the time, and shake well between, rinse out the tube with the remaining alcohol. If the operations have been carried out properly, a few drops of the emulsion put upon a plate will show an orange tinge; a fairly thick film, a full orange, inclined to ruby, when held up to a light. The emulsion must be kept for not less than twenty-four hours."

He filters the emulsion through a plug of wool in a glass funnel, and does not wash it, but washes the plates after coating; he uses no preservative or organifier. In washing, he places the plates in water until it runs smoothly over their surfaces, then applies two additional changes of water, drains them on blotting paper, and dries them by gentle warmth. The film is so tough, that to hasten drying he sometimes applies a piece of clean white blotting paper to the film, and removes superfluous moisture by gently rubbing the blotting paper with his finger. The plates, before coating with collodion, are edged with solution of india-rubber, to prevent the slipping of the film in the subsequent operations. In his paper he mentions several developers he has used successfully; out of all of them he told me that he preferred the following:

Hydroquinone	4 grains,
Bromide of potassium	24 ''
Sulphite of soda	48 ''
Water	I ounce.

Three minims of a 10 per cent solution of carbonate of soda. Development was from five to twelve minutes. All the developers may be used repeatedly. Hypo must be used for fixing; 2 ounces to the pint is strong enough. Washing in the hand for about a minute is enough to remove the fixing salt.

His printing upon the plates was done by the magnesium light, varying the length of the exposure according to the negative, the developer to be used, and the color sought to be obtained. He used for each exposure from 6 to 36 inches of magnesium ribbon, according to circumstances.

In working out this process he at first had many failures from fog, which was not avoided by making the emulsion slightly acid with aqua Mr. Teape tried four varieties of pyroxyline and five or six metallic chlorides, and he attributes his final success in getting rid of fog to the employment of chloride of zinc; this is always slightly acid, but the result, from his other experiments, does not seem to be entirely due to the acidity. At the meeting I remarked that chloride of zinc is one of the substances which, like sulphuric acid, also certain alkalies of given strength, will parchmentize or mercerize cellulose, and that imperfectly mercerized cellulose is less transparent than it otherwise would be; consequently, that if the pyroxyline was imperfectly mercerized from an insufficient proportion of sulphuric acid having been used in the manufacture, the chloride of zinc might have additional action in the right direction, collodion not being a true solution, but an emulsion of minute fibers more or less transparent. With very high microscopic power and proper lighting, the fibrous nature of collodion can be seen.

# PHOTO-MECHANICAL PRINTING IN JAPAN.

At the same association, a fortnight ago, a paper by Mr. W. K. Burton, of Tokio, was read upon the above subject, and in it he gave a description of the works and methods of Mr. K. Ogawa, who was for some years the first and only photo-mechanical worker in Japan, with the exception that in the government military map department photo-lithographic work had been previously turned out. In his collotype work, Mr. Ogawa first strips the film of the negative by thickly coating the film with collodion, allowing it to dry, and then placing the plate in a weak solution of hydrofluoric acid. The film floats off, is turned over, and transferred to another glass plate which has previously been coated with gelatine to secure adhesion. Plate glass is always used, because of the great pressure the image has to endure in the printing frame. sticks to no measured proportions of chemicals, but works by rule of thumb, yet with great certainty in results, because of long experience. When the hydrofluoric acid solution is too strong, the gelatine film will expand, or even wrinkle. The support for the chromated film is plate glass about half an inch thick, the edges and corners rounded by grinding. Collotype work is difficult in Japan, because of the extreme ranges of temperature in summer and winter, consequently the sensitive solution has to be varied to suit; the hotter the weather, the harder is the gelatine used; Nelson's opaque gelatine being used in cold weather,

Coignet's "Gold Medal" at warmer temperatures, and isinglass in the hot weather; if the weather be extremely hot, even chrome alum is added. The quantity of colloid used is about 6 or 7 per cent. of the solution. The bichromates used are those of potassium and ammonium, in equal parts, forming 11 per cent. of the total solution in warm weather: in cold weather, more. The plates are dried in a cupboard, at a temperature of about, at a guess, 100 degrees Fahr.; they are dry in about two hours. After printing, the plates are sunned from the back for a short time, but longer for negatives with strong contrasts; the plates are then washed in running water for about half an hour when the weather is warm, and for a much longer time when it is cold. The inking is done by hand, with two rollers; the first, a German roller. covered with leather; the next, a composition roller, with a thinner ink. With the highest class work an expensive Japanese paper is used, and but thirty impressions per hour can be pulled, and a plate yields about three hundred impressions. With high-surfaced European paper, fifty prints per hour are pulled, and the average life of a plate is about five hundred copies.

Recently Mr. Ogawa has worked chromo-collotype, which in his case is merely a mechanical method of coloring collotypes. "First," says Mr. Burton, "an ordinary collotype is made, and this is handed to an artist, who colors it, using whatever may be the fewest pigments that he considers necessary to produce the effect that he aims at. An average number is about eight, but sometimes as many as twelve are used. The single copy having been colored, a number of copies are taken corresponding to the number of pigments that have been used, and each of these is colored by the same artist with some one pigment, in the parts corresponding with those to which the same pigment was used in coloring the first collotype. These pigments are all of the nature of transfer ink, and a transfer is made from each of them to a lithographic stone. The transfers having been made, the collotypes are passed over the stones, each imprinted with one particular tint only, the number amounting to anything up to twelve. Perfect register is kept by two needles fixed in holes drilled in the stones, and passing through diagonally opposite corners of the paper."

Mr. Ogawa's photo-engraving works contain collotype machines worked by hand; he also has machines driven by steam for photoengraving work. He uses the Meisenbach process, and obtains grain by the employment of the diamond-cut screens made by Levy. He finds a distance of one-fifth of an inch, including the thickness of the cover-glass of the screen, to be about the best distance for average work between the screen and the plate; he most commonly uses a diaphragm of about 1 inch square, with a lens of 13 inches focal length; the less the contrast in the original, the greater should be the distance between the screen and the plate. The greater the distance between the lens and the plate, the larger should be the diaphragm. The chemical process used is one which has been sold in Europe and America as a secret one, which had been bought by Mr. Ogawa, so Mr. Burton asked him no questions in relation thereto, and described alone what

he saw, from which it appears to be the fish-glue process. Ogawa's re-etching is done by applying the etching fluid with a fine hair pencil to those parts of the plate which have to be deepened. Plates are made for the trade by Mr. Ogawa at a rate corresponding to about 6d. per square inch. He turns out prints of about cabinet size at the rate of more than two hundred for a penny, if he gets a large enough order and the paper is supplied to him; in such cases, however, six different pictures are etched upon one plate, or six small plates are fixed to the bed of the machine.

In his paper Mr. Burton put forth the theory that, when using a cross-line screen, each dot produced is a diffraction image of the diaphragm.

THREE-COLOR PROCESSES.

Last Thursday, February 7th, a paper on the above subject was read by Mr. E. J. Wall, before the London and Provincial Photographic Association, which has had rather a run of good papers during the past few weeks, while the other London photographic societies have been exceptionally quiet.

Mr. Wall said that when slides are used to give results upon a screen by means of optical projection, the electric lantern must be used to obtain satisfactory results. It is very easy to take the negatives for this purpose. For the red screen he used a deep orange glass, superposed upon a fiery red one; for the green screen he used two thicknesses of ordinary chromium-green glass; for the violet blue he used two thicknesses of violet blue glass. These he obtained at Messrs. Hetley's, Soho Square, London, after spending two hours upon the premises examining different specimens of their colored glasses with the spectroscope; they gave him every assistance. As to the plates used in the camera, he could not find any in the market sufficiently sensitive to red light, but altogether he had got on well with the Edwards and the Ilford orthochromatic plates. They would notice that his colored

screens were not of polished glass, but free from specks, striæ and easily visible defects; he had found no practical disadvantage in the use of such glasses. As to the lens used, with ordinary photographic lenses he had had much difficulty in seeing the red images when trying to focus with the red screen in position, and finally had to buy a Goertz lens, which is corrected for all three rays. The proper adjustment of the focus for each of the three colors has much to do with success or failure in the results.

He next went into various details as to the difficulties he had encountered in his first experiments on three-color photography on paper.

D E K

Mr. Wall described a photochromoscope of continental manufacture, which he stated to be simpler and better than that of Mr. Ives.

It consists of a box, as shown in Fig. 2, and the three images are laid upon the colored glasses D, E and F. Vertical light is made to pass down through them. B and C consist of thin, transparent reflectors of glass, while A is a silvered reflector; consequently, when an observer looks through the eyepiece K, he sees the three images combined into one colored picture.

## THE HISTORICAL LITERATURE OF PHOTOGRAPHY.

Recently I read a paper before the Brixton and Clapham Camera Club, and began with comments upon the general untrustworthiness of the literature in relation to the history of photography, then urged that the whole field should be re-examined by experts, who should base their utterances after perusal of original records of first publication of discoveries, and upon those alone. Now, it so happened that in the paper as read I did not follow my own precepts, and a few days later repented this omission. At the close of the memoir, in a paragraph not much connected with the main subject, in relation to the chief items of which the oldest acts of publication had been examined, the statement was made that Mungo Ponton was the first man to publish a workable process for producing fixed photographs. I found out the mistake in time, it is to be hoped, to stop the publication of that paragraph at all of the various newspaper offices at which the memoir was republished. As this may serve as a moral lesson to others, the particulars of the case are briefly appended:

In *Photography* of January 3d last, in an article by "W. H. S." it is stated that Mungo Ponton published his bichromate of potash process in *The Edinburgh New Philosophical Journal* in 1838, and that as the daguerreotype and talbotype processes were not published until 1839, Mungo Ponton "may be considered as the discoverer of photography." This being news to me, and as I had the honor of being associated with Mungo Ponton in launching upon the world one of the physical hypotheses of the invisible photographic image, I have searched the journal named for 1838, and found no such article in it. Mungo Ponton's paper was read before the Society of Arts for Scotland, May 29, 1839, and published in *The Edinburgh New Philosophical Fournal*, issued July 1, 1839. Fox Talbot's paper was read before the Royal Society, January 31, 1839; therefore the publication of his process was of prior date.

W. H. HARRISON.

## MONOCHROME PRINTS.

FOR the benefit of those who have not read my first article on monochrome prints, I refer them to page II of "The International Annual" for 1895. I will state here succinctly the method I described. The basis started from is to obtain prints on a sheet of paper which has been sensitized with a 10 per cent. solution of potassic dichromate. These prints are well washed, and then, in order to obtain various tones, the prints have to be treated as follows:

For Orange-Yellow.—Float in lead nitrate and then in potassic hydroxide.

For Black.—Float in ferrous sulphate and then in tannic acid.

For Purple and Purple-Browns.—Float in ferrous sulphate and then in extract of logwood.

For Maroon.-Float in stannous chloride and then in extract of

hypernic.

Since writing the first article I have received several letters stating that the results obtained were unsatisfactory, inasmuch as I did not indicate sufficiently the details of the manipulations, the grade of

paper to use, and how to retain clear whites.

The orange yellow with lead, and the black with tannin, I will not dwell on, because I have no faith in them. I have often obtained good prints, but more often sad and sombre pictures, particularly with the tannin method. The action is not reliable, for I have never been able to tell at what point the washing had been completed. But with the hypernic and the logwood this is not the case. These processes I have reduced to an exact method of manipulation.

The first paper I ever used was Whatman's drawing paper, and I found this to be so coarse and fibrous that the image sank into the paper, and only appeared in detail as long as the paper was wet. I next used Whatman's finest paper with better results. The best paper I have used so far is Benoit's French blue print paper, which I procured from Benoit's store, in New York. Still I could wish for even a

better paper.

Float the paper in a 10 per cent. solution of dichromate, or, if a good wide camel's-hair brush is obtainable, paint a saturated solution on the paper; tack it on a board and dry in a horizontal position. Obtain a good print. About ten minutes in sunlight will be sufficient exposure for an average negative, and then wash your print in hot water, if you like, until the last washing is colorless. Take a 5 per cent. solution of stannous chloride (tin crystals, commercially) and float the print in this until the picture shows signs of bleaching. Now wash only once in warm water and pour on your solution of the extract of hypernic. It must be borne in mind that the extracts of hypernic and logwood are not soluble to any great extent in cold water, but are soluble in water anywhere from 190 to 212 degrees Fahr. Take your hot solution, say of hypernic, and having poured it over the print, rock it gently and the picture will appear in bright maroon. Now pour hot water in the dish to overflowing, and when the picture is quite deep enough and all the details show, pour out the water and wash a moment or two, or until the water runs off clear. Any shade of red may be obtained, depending on the original strength of the chloride of tin and on the strength of the hypernic. I have not mentioned the strength of the extract, because it is immaterial. I use the liquid extract I part, and about 10 parts of boiling hot water. The logwood is treated in exactly the same way. Stannous chloride produces, with logwood, rich purples. With ferrous sulphate, dark, almost black, purples, are obtained. If desired, the stannous chloride can be omitted, because potassic dichromate is also a mordant for these wood extracts. If stannous chloride be omitted, the tones will not be so brilliant. The dark purple tone of the logwood can be easily altered into a rich brown by washing in a 5 per cent. solution of oxalic acid. Too strong a solution of oxalic acid will bleach the picture.

These processes stain the fingers very badly, but the stains are easily removed by the use of a concentrated solution of oxalic acid. A little

chloride of lime in addition will bleach more rapidly.

I am in hopes that these methods will be worked up by those who know more about paper than I do. A paper which is not too porous, and at the same time not too impervious, would be desirable.

MAXIMILIAN TOCH.

## DIATOMS IN PHOTO-MICROGRAPHY.

THE science of photo-micrography, like most forms of research, could not get along comfortably without a few pet *cruces* to busy the minds of its votaries and beget more or less ardent bickerings among them. Prominent among these is the long-mooted question of the true structure of diatoms. Many books have been written about these tiny but lovely creations, and the wide divergence of theories and demonstrations fosters the belief that we still don't know a vast deal of their real nature.

The diatom, as we commonly see it in its acid-boiled and mounted condition under a cover-glass, is merely the silicious shell that once encased a mysterious phase of vegetable life. Taking the circular diatoms as a type, they are constructed somewhat like a shallow pill-box, the flat top and bottom, called valves, being joined on the outer border by a thin girdle or hoop. In the living specimen this crystal case encloses a brownish plasmic mass of considerable complexity. Dead and cleaned, the valves commonly come apart, and in a dry "strewn" slide lie in a confused mass, some entire, but many broken, the whole often intermingled with the separated hoops. Properly displayed, the valve alone is shown, mounted in some highly refractive medium and in contact with the thin covering glass. It is now a crystal disc, covered with exquisite tracery or pearly beading, which it is the joy of the microscopist to study in the hope of discerning its actual structure.

Although the valves of diatoms are endlessly varied in contour, polygonal, boat-shaped, lenticular, rod-like, or even moniliform, the most common marking is a hexagonal areolation resembling honeycomb. It is a curious peculiarity about this apparently simplest and most regular form, that under the lens it is protean, changing its aspect at the slightest alteration of focus. At one instant the honeycombings show up as sharply drawn black walls, the enclosed six-sided spaces being crystalclear; at another, these interspaces become seeming perforations in a black surface, like the round holes in a colander or in a sheet of the perforated cardboard on which our grandmothers used to work sampler designs; another touch of the micrometer screw, and each perforation glimmers as a perfect pearl, with its nucleus of refracted light and delicately graded side-shadow, like a hemispherical bead rising from a

translucent surface; still another turn brings the hexagonal walls again into view, but now semi-translucent, thickened, veined along the middle and with complex beadings at their intersections, while the intervening areolæ show ghostly pittings and patterns in their depths; and an instant later we have mottled, cup-like hollows with a glinting bubble at the bottom of each, while the separating walls gleam as brilliant lines of light in hexagonal arrangement. It is clear that what we choose to call pearls and cups and the gleams that we see, now at the base of a honeycomb cell and now at the summit of a perfect crystal dome, are but phantasmal illusions, mainly due to diffraction, and that the lens has failed to show us certainly how this marvelous silicious mystery is constructed. The trouble is that the microscopic vision is not purely dioptric like that through a reading glass or the telescope, and we do not view the diatom valve in the same way that we would see a cutglass dish held up to the light. We behold instead an object on so minute a scale that the intricate phenomena of interfering wave-lengths of the light rays and of diffraction modified by refraction come into play, for we are dealing with dimensions and distances comparable with wave lengths, and the successive visual transformations are because of varied interminglings of these conflicting conditions. The larger the numerical aperture of the objective, that is, the greater its so-called "resolving power" in proportion to the actual size of the markings, the more notable these bewildering changes become. And they are still further complicated by the fact that the markings of diatom-valves are not confined to either surface alone; for the under face may have a wholly distinct scheme of patterning from the upper, so that the microscopic eye blends the two into a new and illusive design on an apparently increased scale, much as the interference of the delicate lines of a moiré fabric give birth to a broader accidental marking.

These secondary spectral patterns are greatly affected by the density of the medium in which the diatoms are mounted. Assuming, for the argument's sake, that the areolations of a decussately figured valve are shallow cups hollowed out of a crystal surface, they must necessarily act as lenses when submerged in a medium having a refractive index materially different from that of the silica of which they are composed. In water, for instance, they are concave lenses of silica; in a more highly refractive liquid, such as styrax or monobromide of naphthaline their part is reversed and we virtually look through convex lenses of the mountant. Observation confirms this assumption. The refractive index of the silica of a diatom is 1.43; of balsam, 1.52; of styrax, 1.58; and the denser the medium as compared with the diatom, the more visible its markings, so that preference is given to styrax over balsam as a diatom mountant, and monobromide of naphthaline, 1.65, or quinidine, 1.70, would be better still, were they not, unfortunately, liable to deterioration. One of the most successful photographers of difficult diatoms, such as the disheartening Amphipleura pellucida, says that as compared in balsam and monobromide the difference in the visibility of the lines is as great as between a faint pencil design and an ink drawing.

By exhaustive studies of the diatom valves in differently refractive media and under varying angles of illumination, as well as by examination of fractured frustules, many of which exhibit the so-called "postage-stamp" break, diatomists are now pretty well agreed in discriminating between pitted markings and raised or true pearls, but an examination of their methods and results is quite beyond the scope of this unambitious paper. The only moral herein attempted to be pointed is that the microscopical student must get rid of all idea that he sees objects by simple dioptric vision, and I know of no better demonstration than focusing a diatom in the photo-micrographic camera, or, rather, mis-focusing it through all its perplexing gamut of change from perfect honeycombing and well-defined sunken cells to

equally perfect and salient pearls.

The editor of the Bulletin has kindly reproduced in half-tone three of my recent negatives to illustrate this article. For convenience, I have taken, first, a comparatively gigantic diatom, Coscinodiscus radiatus, with a moderate initial magnification, so as to give greater "depth" and planeness as afforded by a Zeiss apochromat of 4 millimeters' focus, obtaining the necessary enlargement by the use of a Zeiss compensated projection eyepiece. Figures 1 and 2 show the same subject under absolutely identical conditions of illumination and amplification, save that the focusing of Fig. 2. is a trifle the deeper. It is not easy at first to realize that we are looking at the same object, but close inspection will show that every structural characteristic of the one is reproduced in the other, the difference being that all the relations of light, shade and perspective are wholly altered. I have taken three or four other negatives of the same diatom, as unlike each to each as the two here given; but these examples suffice to prove my point. Studying them attentively, one can comprehend after a fashion why it is that the common test object, Pleurosigma angulatum, will show decussate lineation and dark and bright beading on different parts of the same frustule. It is purely the effect of varying focal distance, the surface not being a true plane. More than this, by manipulating the collar correction of a good objective, a curious effect can be produced which I can only liken to stereoscopic blending of adjacent areolæ by diffraction so that a pseudo-image is created above or below the true plane of the real object.

Figure 3 has been selected because the curved or rather undulating surface of the diatom, a *Coscinodiscus* of another species, I fancy, enables the assemblage in one picture of a number of focal modifications of the actual structure, whatever it may be.

43.

Washington, D. C., February 15, 1895.

A. A. ADEE, A. M.



FIG. I.

Coscinodiscus radiatus. × 725.

Zeiss apochromat, 4 mm.; Projection eyepiece No. 4.

Central illumination. Negative by A. A. ADEK.

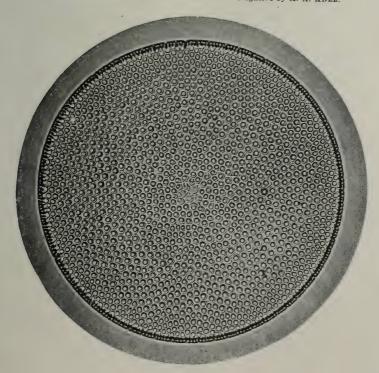
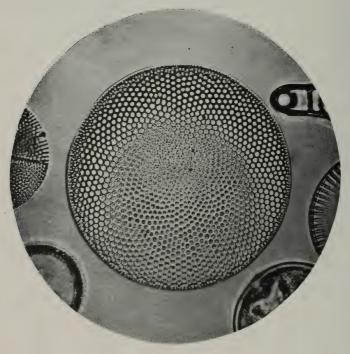


Fig. II.

Coscinodiscus radiatus. × 725.

Zeiss apochromat, 4 mm.; Projection eyepiece No. 4.

Central illumination. Negative by A. A. ADEK.



 $FIG.~III.\\ Coscinodiscus?~\times~375.\\ Zeiss~apochromat, 4~mm.;~Projection~eyeplece~No.~2.\\ Slightly~oblique~illumination.~Negative~by~A.~A.~Adee.$ 

# LANTERN SLIDES—HOW TO MAKE AND COLOR THEM.

BY DWIGHT LATHROP ELMENDORF.\*

(Continued.)

BEFORE beginning to make lantern slides be sure that the darkroom is quite clean, especially the developing table and the floor under and around it. It is the invariable custom of the author to wipe the table and floor with a damp cloth.

This precaution is always necessary, but particularly so if the room has been used for developing purposes previously. It is almost impossible to prevent some of the various solutions from dropping from the plates or fingers during the processes of development and fixing, and as the water soon evaporates, fine crystalline deposits are left, which ascend in the form of fine dust upon the slighest provocation.

This chemical dust has disastrous effects upon every photographic article it touches. It is worse than any form of bacilli, because there are no remedies for the evils it causes. A strict quarantine against the plague is the only safeguard.

Be sure that the source of actinic light and the developing lantern are in order. Fill the hypo tray half full of filtered hypo solution, and into the alum tray pour an equal quantity of filtered alum solution. Keep these trays away from the developing table at all times with great care.

Measure out 3 ounces of Anthony's hydroquinone developer, as it comes prepared in bottles, and add 2 ounces of pure water. Croton water is liable to turn it yellow very quickly. Then add two or three drops of the bromide solution. This mixture forms the standard developer. Never allow anything else but plates to get into this developer.

Clean the back (the glass side) of the standard negative, dust off the gelatine surface with a camel's-hair duster, and place it in a printing frame, gelatine side up.

All the foregoing operations should be carried on by ordinary light. At this point all actinic light of any kind should be shut off; of course no stray rays of daylight should be admitted into the darkroom.

By the red or amber light of the developing lantern open a box of slide plates, dust off both sides of one, being careful to dust the gelatine side last, and place it upon the negative in the printing frame, so that the creamy white gelatine surface of the plate is in contact with the negative. Then take up the frame, holding the plates in contact gently with the thumbs, and adjust the slide plate over the desirable part of the negative, while looking through the plates at the developing light. When the desired position is obtained, lay the frame down level and adjust the pressure board carefully, so as not to move the slide plate. Unless this is carefully done, the negative may be scratched or broken.

<sup>\*</sup>Commenced in the January issue. Copyrighted, 1894, by E. & H. T. Anthony & Co.

Put away, or close, the opened box of plates.

The plate is now ready for exposure to actinic light.

Hold the frame so that the light, when turned on, may fall perpendicularly upon the negative at a measured distance from the source of the light, say, 2 feet.

These two points must be carefully noted, for, in the first place, the sharpness or distinctness of the image depends upon the direction in which the light passes through the negative. When the rays pass through it perpendicular (at right angles) to its surface, the sharpest image is obtained.

In the second place the negative should be at a known distance from the source of light, because the intensity or active power of light varies inversely as the square of the distance from its source. That is, if the negative, at a distance of 2 feet from the light, requires an exposure of four seconds, at one-half of the distance, 1 foot, it would require an exposure of only one second to obtain the same result. At twice the distance, 4 feet, it would require an exposure of sixteen seconds. Therefore be careful about these little things, or there will be variations in the results of the exposures, even when exactly timed.

To return to the work:

Hold the frame as directed and turn on the actinic light for two seconds by the clock. Remove the slide plate and write plainly, "two seconds," across the gelatine surface with a lead pencil. Put this plate away, or wrap it up light-tight for a few moments.

Adjust another slide-plate on the same negative, and under the same conditions exactly expose it four seconds. Remove this plate from the frame, mark it "four seconds," and place it with the other exposed plate.

After testing the temperature of the developer, which should be about 70 degrees Fahr., pour it into a clean developing tray. The temperature should not be lower than 65 degrees nor higher than 75 degrees. A cold developer works too slow and makes the plates black and white, while a warm one is too rapid in its action and causes a smoky appearance. It is better to have it just right.

The tray should be placed in front of and about 6 inches from the amber glass of the developing lantern.

Place the two exposed plates, gelatine side up, in the developer, and rock the tray back and forth so that the developer rushes over the plates in every direction. There must be enough developer in the tray to cover the plates to a depth of at least an eighth of an inch when the tray is level. Plenty of developer must be the rule.

The rocking motion must be kept up during the greater part of the time the plates are in the developer. Without this motion the plates develop unevenly, and are liable to be spotted or mottled, and will often appear like some of the half-tone prints sometimes seen in magazines, which are wretched apologies, to put it mildly.

The plate marked "four seconds" will probably begin to change color slightly in about thirty or forty seconds. It may begin sooner. At all events it will begin before that marked "two seconds." The exact time

to elapse before the action begins cannot be predicted by one unacquainted with the negative or slide-plate used. Different emulsions, even by the same manufacturer, vary greatly in sensitiveness, no matter how they are marked. Don't get impatient, but keep on rocking the tray. If the outlines of the picture are not distinctly seen after sixty or a hundred seconds have elapsed, the indications are that the plates were not exposed long enough. If, however, one of them does come up nicely, the correct exposure may have been found in this first attempt, or it may be between two and four seconds. If they do not develop nicely, cover the tray with the top of a cardboard box to exclude light, leaving the plates in the developer and expose another plate on the same negative, under the same conditions, five seconds exactly. Mark it and put it away. Then expose still another on the same negative, as before, six seconds. Mark this and put it with the five-second plate.

Remove the first two plates from the developer, rinse them off by holding them under a tap for a moment, and then put them into the hypo solution. Don't put your fingers into the hypo. If the fingers are wet with hypo they should be thoroughly washed before any other work with plates or developer is attempted.

Put the last two exposed plates into the developer, and rock the tray as before. Probably one of these plates has been correctly exposed, so watch closely. The plate which had the longer exposure will begin to change color first. In a few moments after the plates are thoroughly wet by the developer, the outlines of the picture will begin to appear, somewhat as they do on sensitive paper on sunlight, only the color will be different, either brown or black; and every little detail will gradually be seen increasing in distinctness and in depth of color, until it appears as a finished photograph, but more beautiful.

The plate which had five seconds exposure will "come up" or develop somewhat slower, but that is only to be expected because it was exposed a shorter time to the actinic light. When the former plate looks quite dark, the latter will appear lighter. Note carefully the degree of darkness of each plate as compared with the white bottom of the tray.

When the six-second plate has become much darker than you think it ought to be, take both plates out of the developer, rinse them off under the tap and place them in the hypo and leave them there for two or three minutes. Put away all the unexposed plates and turn on the actinic light.

Then take the first two plates out of the hypo, rinse them off, and hold them up between the light and the eyes, placing a piece of ground glass between the plates and the light. Examine them carefully, by looking through them at the ground-glass. The plate exposed two seconds probably will have little or nothing upon it.

That exposed four seconds may have quite a good image, but very cold or black and white, and it may be very thin. Then take out the last two plates, rinse them off, and examine them by looking through them at the brightly illuminated ground-glass. The novice will probably be surprised to find all of the plates much thinner than when they

were placed in the hypo. A short description of the cause of this may be of benefit.

The actinic light forms the invisible image, the developer causes a chemical reaction upon the molecules of silver which have been acted upon by the light, so that the image not only becomes visible, it also becomes a body as we understand the term.

The developer seems to pile up the molecules of silver upon the plate so that where there was the greatest action of light there is the greatest depth of deposit and *vice versa*. When the conditions are favorable, this is one of the most beautiful of all chemical actions.

As all of the molecules of silver upon the plate are not acted upon by the light when the exposure is correct, it is necessary to remove all those not developed, and the hypo does this; it is called fixing. The greater part of the silver on a plate is dissolved in the hypo, therefore the plate is much thinner when it leaves it. For this reason the plates must be developed much darker or thicker than at first seems necessary. The development must be kept on long after the picture looks very nice. The most difficult point in the whole process is the determination of the exact amount of deposit developed upon the plate.

In other words it is difficult to decide upon the exact moment to remove the plates from the developer. This desirable knowledge can only be attained by systematic experiments with one negative, one developer and one kind of plate, a tentative method which trains the eyes to a nice perception of detail and density or thickness of deposit.

Returning to the four developed and fixed plates, choose the best one and note the time of exposure written upon it.

Suppose, for example, it was five seconds. Expose two more slide plates on the same negative, giving each plate exactly five seconds at the same distance from the light, that is, under the same conditions as before. Put these plates into the same developer. Having an equal exposure they will develop alike. Develop them until they seem to be dark enough. Then remove one of them, rinse it and place it in the hypo, leaving the other in the developer a little longer, say ten or twenty seconds. Then remove it, rinse it, and place it in the hypo, so that it can be easily distinguished from the other. After a lapse of two or three minutes they will be fixed enough for examination.

Compare them before the ground-glass and white light. Which is the better?

If it is the one removed last from the developer, be careful to develop other slides a little longer than is thought necessary.

If it was that removed first, try to imitate in every respect the manipulations which produced it. If they are both too dark, they were developed too long. Expose too more plates the same length of time the best slide had, and develop them. When they seem to be developed almost enough, take one plate out, rinse it under the tap for a moment and examine it by looking through it at the developing light for a moment. Study its qualities carefully by transmitted light. If the picture is a landscape, the trees and all shadows should appear very dark; the sky should show almost nothing at all. After noticing every-

thing that is noticeable, the slide should be rinsed and placed in the hypo. This examination should not last over ten seconds. All this time the other plate is developing. Notice its appearance in the developer; remove it when it seems dark enough; rinse it and examine it also by transmitted light, taking care to notice all the points wherein it differs from the first one. After a careful examination, rinse it and place it in the hypo, keeping it apart from the other plate. It is easier for some to judge the density and quality of a plate by transmitted than by reflected light. After the plates are fixed they may be examined, and the good and bad points of each carefully noted.

The above exposures were actually tried by a beginner, working under the author's directions, and the results were very gratifying to both pupil and instructor. The standard negative was known, and the series of exposures was arranged so that it would include the proper one, but the pupil was not aware of that fact. The pupil decided upon the correct exposure without any suggestions from his teacher.

If none of these exposures chance to be the right one for the reader's standard negative, other periods of exposure should be systematically tried after the same manner. After a few trials the correct exposure will be found.

This tentative method may seem to be a waste of plates on one negative, but it is not, even if thirty or forty plates are so used. Don't be discouraged by a few or by many failures. The most expert slidemakers don't obtain twelve fine slides from a dozen plates—not by a large majority.

By thoughtfully working this method out the novice will learn how to judge the quality of the slide as it develops, and when to remove it from the developer.

The principal idea of this method is to train the eyes so that the moment another negative is compared with the standard the proper exposure can be decided upon with a certainty that would astonish those accustomed to modify their developer to suit any haphazard exposure. Therefore, keep at the standard negative until not only one, but several good slides are made from it, without modifying the developer at all. After being satisfied that a good slide can be made from the standard negative, mark the correct exposure upon one edge of the negative. Then compare all other negatives, from which slides are to be made, with the standard. Choose those which are of the same density and color, and place them in one pile. They will all need an exposure like that given to the standard. Those which are thicker or denser will require longer exposures; those which are thinner, shorter.

The color of the negative also necessitates a change in the length of exposure. Those which are gray require less than those which are black. Those which are yellowish require very long exposures.

It is only necessary to remember what was said in the introduction about the spectrum colors to see the logic of this.

(To be continued.)

## A CURIOUS COINCIDENCE.

IN our editorial we have given a general outline of the work of Mr. I McDonough in the direction of obtaining photographs in colors. While comparing the patent granted to him in 1892 in the United States, England and France, with a published account of the work of Professor Joly, we were struck by the great similarity in the two methods. While the confirmation of Mr. McDonough's work by such an authority as Professor Joly strengthens belief in the practicability and ultimate entire success of the process, we trust that the latter gentleman will concede Mr. McDonough's priority in the matter. It is for this latter reason that we publish the two accounts in parallel columns.

#### AMERICAN JOURNAL OF PHOTOGRAPHY.

DECEMBER, 1894.

- 1. Professor Joly, of 39 Waterloo Road, Dublin, describes, as follows, his process of obtaining by means of a single photographic image of an object a representation of this object in its natural colors, or in colors seeming such to the eve.
- 2. They are ruled in three several tints. having such selective light absorptive properties as will secure that one line will so sift the light passing through it that the sensitive film beneath will be affected in a manner corresponding to the manner in which (according to measurements and theory) the red-sensitive newsor in the human are are affected. tive nerves in the human eye are affected by the various wave-lengths of the spectrum. A second line will similarly sift the rays falling upon it so that the plate beneath will be affected in the same manner as the green-sensitive nerves are affected by the several wave-lengths; the third line will do this in the manner in which the blue-violet sensitive nerves are affected.

#### 3. The rays thus fall upon it after passing through the screen.

## UNITED STATES PATENT OF JAMES W. McDONOUGH.

DATED MARCH 22, 1892. Nos. 471,186 and 471,187.

Title: Improvements in the Art of Producing Colored Photographs.

Patented in England and France.

2. I take a plain glass plate and flow or cover it with a coat of varnish or similar material, which will dry tacky. I then dust the plate with a mixture of colors composed of fine or powdered particles containing the colors desired. I thus obtain a colored surface composed of particles lying side by side, which have the properties of stippled colors, instead of the properties of a true mixture of pigments. In order to get these colored particles, I use powdered glass, trans-

parent pigments, gelatine, resin, or shellac stained by aniline dyes, etc.

I then take a sufficient quantity of clean white shellac dissolved in alcohol, to which I add aniline colors—say, for one lot, red and yellow colors in such proportions that the result will be a red which, when viewed by transmitted light in thin when viewed by transmitted light in thin layers, will cut off or absorb as much green, blue, violet, and yellow as possible, or which, in other words, will transmit, as far as possible, a pure red. Another lot is colored with as pure a green as may be formed by mixtures, adding yellow to absorb blue.

Another lot is colored blue \* \* \* It will reflect or transmit a mixture of these colors, which will be white in proportion to the purity of color, cleanliness of mixture, and quantity of light trans-

mitted or reflected.

3. Where the sensitive film is either flowed over or transferred to the glass plate upon which the colors are attached, it may be exposed in the camera reversed, or so that the image may act through the glass from the back, etc.

- 4. From this negative a positive transparency is printed by contact in the usual manner.
- 5. To produce this effect upon the eye and also not to interfere with the form of the image, the lines must be of sufficient fineness to blend—or be unobtrusive—when viewed by the unaided eye.
- 6. In viewing the picture through the parti-colored screen it is essential that the lines upon both plates (the photograph and the screen) be in close contact.

7. I may also rule the primary colors directly upon the photograph. Similarly I may use a sensitive plate for taking the photograph in the first instance which has the requisite selectively absorbing color tints ruled directly upon the sensitive surface and which may wash off in the subsequent operations attending development.

- 8. Or I may secure an approximation to the original color-sensations by the use of more than three tints.
- 9. In cases where I use the same tints for the lines used in taking and viewing the picture I may lay those down upon the solid transparent support of the sensitive film as a substratum.
- 10. Whese the same finely distributed tints are used, both in taking and viewing the photographic image, these may not necessarily be deposited according to an accurate "pattern" upon the plate, but promiscuously, as in the form of fine

- 4. Or a negative or positive formed by any of the well-known developers and processes. The colored image is formed by the reflection of light through the colored particles, or by the transmission of light through them.
- 5. When viewed under the microscope, the white surface is seen to be composed of a multitude of different colored particles lying side by side and separated by small distances.
- 6. Where the sensitive film is either flowed over or transferred to the glass plate upon which the colors are attached it may be exposed in the camera reversed, or so that the image may act through the glass from the back, etc., \* \* \* or a negative or positive formed by any of the well-known developers and processes. The colored image is formed by the reflection of light through the colored particles, or by the transmission of light through them.
- 7. I take a support of plain glass, celluloid, paper, or other suitable substances, upon the surface of which is a sensitive photographic coating, preferably forming what is known as an "orthochromatic dry plate." This may be rendered tacky by immersion in water or diluted glycerine. If preferred, however, the plate may be used before it becomes quite dry in the course of its manufacture. I dust the plate, either while it is somewhat moist in the course of its manufacture or after it has become tacky, as above explained, with a mixture of colors composed of fine or powdered particles containing the colors desired. I thus obtain a colored surface composed of particles lying side by side, which have the prop-erties of stippled colors instead of the properties of a true mixture of pigments.

  \* \* Thus, particles which do not allow the passage of colored rays on account of absorption may be washed off, because as to such particles the gelatine remains soluble.
- 8. As the mixture of colors formed in this way by red and green does not form a bright yellow, I may use in addition another colored as near the yellow of the spectrum as possible.
- 9. The photographic plate thus obtained, consisting of colored particles applied to its sensitive surface, may be exposed to the action of the light from the object to be photographed through a camera in such manner that this light will pass through the colored particles and effect the sensitive film, thus producing a latent image of the object.
- 10. I dust the plate, either while it is somewhat moist in the course of its manufacture or after it has become tacky, as above explained, with a mixture of colors composed of fine or powdered particles containing the colors desired. \* \* \*

flaky dust let fall upon the plate and protected by a waterproof varnish, or contained in a layer of gelatine maintained in a fluid state while the dust is being deposited.

- may use one consisting of squares, diamonds or any other suitable similar forms, the colors in this case being stamped or rolled upon the plate from a surface bearing minute raised patches suitably spaced, so that after three such printing operations the entire surface of the plate may be overlaid with patches of the three requisite colors in close juxtaposition.
- 12. I may in all cases aid the reproduction of the original colors by the use of uniform color screens inserted in the path of the rays falling on the plate either for part of the time of the exposure or during the whole. Thus I may aid in the registration of the red rays by inserting a screen cutting off the shorter wavelengths, more or less, for a portion or the whole time of the exposure.
- 13. Where the same finely distributed tints are used, both in taking and viewing the photographic image, these may not necessarily be deposited according to an accurate "pattern" upon the plate, but promiscuously, as in the form of fine flaky dust let fall upon the plate and protected by a waterproof varnish.
- 14. The dust may consist of minute particles of glass, colored in the requisite tints.
- 15. Or such colors may be laid on in colored flakes and burnt into the glass support.
- 16. These are ruled upon the screen in such depths as will secure that the finished screen shows little or no color to the unaided eye when looked at by transmitted light, but looking darkened or gray due to the light absorption of the three tints.
- 17. I find that the aniline dyes, mixed with thin dilute gum arabic, are suitable for ruling upon the plate.
  - 18. I may mix the dyes with gelatine.
- 19. I may rule the lines upon celluloid or other transparent support.
- 20. The colors of the view screen may underlie the sensitive film, being primarily deposited upon the glass support.
- 21. In these cases the plate is developed as a positive, when it may be viewed as a photograph in colors, owing to the presence of the visual screen beneath the film.

This result may also be obtained in a measure, by covering the surface with varnish, so as to make it smooth.

- 11. I will merely add that the particles are dusted, spread, or placed upon the plate in such proportions as to produce a white or transparent surface.
- 12. The use of the orthochromatic sensitive plates and colored screens before the camera for the purpose of sifting and regulating the action of different colors upon the film is too well known to require explanation.
- 13. I then dust the plate with a mixture of colors composed of fine or powdered particles containing the colors desired.
- 14. In order to get these colored particles, I used powdered glass, transparent pigments, gelatine, resin, or shellac stained by aniline dyes, etc.
- 15. The glass colors, after being dusted upon the surface of the glass plate, may be melted into the body of the plate by fire, if desired.
- 16. If this same mixture is dusted or thinly spread upon the prepared glass surface it will reflect or transmit a mixture of all these colors, which will be white in proportion to the purity of color, cleanliness of mixture, and quantity of of light transmitted or reflected.
- 17. In order to get these colored particles, I used powdered glass, transparent pigments, gelatine, resin, or shellac stained by aniline dyes, etc.
- 18. I used powdered glass, transparent pigments, gelatine, resin, or shellac stained by aniline dyes, etc.
- 19. I take a support of plain glass, celluloid \* \* \*
- 20. Where the sensitive film is either flowed over or transferred to the glass plate upon which the colors are attached, it may be exposed in the camera reversed.
- 21. Or a negative or positive formed by any of the well-known developers and processes. The colored image is formed by the reflection of light through the colored particles, or by the transmission of light through them.

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PRESS OF SCHILLER & FLEMING.

FROM 18 X 22 NEGATIVE, MADE WITH THE

"ANTHONY ELECTRIC LIGHT APPARATUS."

BY RUD. BACHMANN.



#### AMERICAN PROCESS WORKERS.

"WRITING of the European examples of photo-mechanical processwork shown at the exhibition of the Society of Amateur Photographers of New York, the *Photographic Times*, of New York, says: 'These are magnificent productions. We cannot deny that the foreign work is superior to the American in many respects. It is softer and free from the coarse grain which appears to mar nearly all the work printed over here.'"—The Photogram.

It was pitiable to see such a misstatement in the *Photographic Times*, once edited by J. Traill Taylor. It passed unnoticed at the time by the amateur photographers who read it, but now that it is quoted by journals of some circulation among the increasing thousands who are interested in process work, it becomes a serious libel on the pioneer process workers in this country.

To those who saw the exhibition in question the statement is a ridiculous one. From a photographer's view, the exhibition showed the superiority of American work in every department. For example: American exhibitors showed color plates, without the touch of a graver, that produced results in three printings better than those printed in any number of colors abroad.

In half-tones and collotype work the foreigners could not compare with us. The only branch that appeared to possess any advantage over ours was photogravure, and even there it could not be claimed as a photographic triumph, for the reason that the foreign plates were so much worked over with burnisher, burin and roulette that they would more properly be called mezzotints than photo-process work.

The evidence of our superior work is found everywhere. In the very number of the *Photogram* mentioned are some half-tones from excellent originals printed on super-coated paper, with the best of ink, and yet the blocks themselves would not be permitted out of an American photoengraver's place. As if to emphasize the absurdity of the *Times'* editor's statement that "coarse grain seems to mar all our work," the *Photogram* says in a following paragraph: "A superb collection of half-tone engravings has been received from the Chemigraph Company, Chicago, printed from plates measuring 18 inches by 14 inches. So well has the work been done that it has led many who have seen them to declare that they are albumen prints—and, indeed, the mistake is excusable. Other examples are printed so nearly akin to collotypes

as to deceive experts, until a close examination revealed the existence of a screen in their production. These are the finest examples of large half-tone work we have yet seen." There is an opinion of American work worth considering.

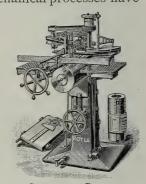
It is well known that Americans have gone to Europe, to teach advanced process work, and that by using American processes, cameras, screens, copper, sensitive papers, routing and blocking machinery and printing presses, they are enabled to produce quite good work, being aided over there by better paper and ink than we possess, together with a climate admirably adopted to good press work.

This same editor divides "all photo-mechanical printing processes into two distinct classes. To the first class belong the inventions of the late Walter B. Woodbury. The second class contains a large variety of processes."

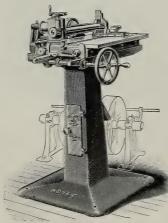
It is plain that one who will make such a classification as that, for evident reasons, is not entirely qualified to judge process work anyway. But it is a pity that his slur on American process workers should have to be treated seriously.

#### MARVELOUS MACHINES FOR PROCESS WORK.

It has been shown how fin-de-siecle photo-mechanical processes have forced improvements and the creation of new machinery in paper-making, ink-making and printing. We illustrate herewith two machines that are of direct interest to the process-worker, for by their means the plates are quickly prepared for blocking. Every one making relief plates twenty years ago will remember the trouble in getting depth in the "whites," as it was called, that meant in the rather broad spaces, between lines in the sketchy pen and ink drawings of those days. As there was no routing machine that could be trusted to cut



COMBINATION ROUTER.



THE BEVELING MACHINE.

away the metal in those spaces, we were obliged to deepen those places by longer etching in strong acid. Little wonder we got broken lines. For the past fifteen years the writer has been using improved machinery of the same maker as here shown, and he can't help but speak affectionately of them as one would of old and well-tried friends. To appreciate this feeling, imagine yourself standing over one of these routing machines. The hour is 1.20 A.M., and the place is in one of the great newspapers. The paper must go to press in ten minutes. There is on the routing machine a large cut of a conflagration that

took place that evening, with great, broad, white spaces to show the

glare of the fire and the steam in the picture. These broad spaces of solid metal in the cut are being torn out of the tough metal by this machine. The cutter, spinning around at a rate of 15,000 revolutions a minute, is ploughing its way through the metal, scattering chips in a shower in all directions. If in these few critical minutes a part of this delicate machine should break, a bearing should get hot, a cutter snap, a belt or a nut loosen, the cut would be too late for the press. The paper would be likely beaten by its rivals and thousands of dollars would not repair the loss in prestige. Besides, the photo-engraving department would experience next day what is termed a "shake up," which means a dismissal of all hands. Well, reader, if you had been through such a strain as this, with the responsibility resting on youthat the last cuts, always the most valuable ones, would get to press on time; then, if this responsibility lay upon you day after day for years, you could not write but tenderly of machinery that, if but treated properly, would be the last to fail you in your greatest emergency. If these machines were not of the highest value to photoengravers the world over, they would still be of interest as marvelous pieces of mechanism. The combination router will not only rout flat plates in any way or in absolutely straight lines, but will rout curved plates to fit cylinders of any diameter. This is a requirement for the new multi-color presses.

The beveling machine is a necessity for half-tone blocks, as it preserves the edges of the cut absolutely perfect.

The genius to whom most of this fine machinery is due is Mr. Vernon Royle, of Paterson, a most modest, unostentatious gentleman. His relaxation from the strain of inventing machinery is in the joys of amateur photography, for which he has obtained considerable reputation. We hope to reproduce some of his later work and let it tell its own story.

#### PHOTO-ENGRAVERS' UNION NUMBER ONE.

The rapid growth of the photo-engraving business, together with the method adopted in hiring help which prevailed, has brought into existence a number of young men who, with a few months' experience, call themselves photo-engravers. They are the cause of considerable injury to the business in many ways. They discourage experienced men from continuing at the work to which they have often given the best part of their lives. To employers they swarm, in answer to advertisements, crowd older men out, do unsatisfactory work, are dismissed, only to have their places taken by others "half-baked" like themselves, disgusting the employer finally, and he gives up the business.

The trouble is there is no term of apprenticeship, nor no wage standard at present. To remedy this, the photo-engravers of New York City organized themselves last April, and have a charter from the International Typographical Union. They meet at No. 263 Bowery, on the first Monday and third Sunday of each month. They have already about two hundred and twenty-five members, representing workmen from all the photo establishments but two.

The officers of the association are: Theodore Atwood, President; H. Webb, Treasurer; Henry O'Brien, Vice-President; Edward Gaffney, Secretary; Donald Frazer, Corresponding Secretary; D. Williams, Financial Secretary; Louis Reimer, Sergeant at Arms. Their delegates to the Central Labor Union are: James Ryan, Edward Gaffney and Charles J. Kane.

Their purpose is to insist that apprentices work at the business four years, and become good workmen, before they be permitted to apply for a skilled photo-engraver's position. They intend, also, to put a stop, by legislation, to teaching convicts photo-engraving in State institutions, as is at present done. It is possible that the process-workers of the whole Union may become affiliated on such a basis as this union is founded, and if they but raise the standard of workmen, the result cannot help but be beneficial to employers as well as the employed.

## SOME NEW THINGS IN PROCESS WORK.

THE Binner Engraving Company, of Chicago, forward a catalogue of their stock plates that helps to maintain the reputation of their city for excellent work.

The Heliotype Printing Company, of Boston, are now covering the whole field of photo-mechanical printing. Besides their well-known heliotype process, they are doing photogravure, photo-lithography in colors and half-tone blocks, besides zinc etching. Mr. W. I. Scandlin, the manager, does not think the relief block the best embodiment of half-tone reproduction, and promises to show in future numbers of the Bulletin what, in his judgment, is.

The F. Gutekunst Company, of Philadelphia, are now making halftone relief blocks, and if the same skill and artistic judgment is brought to bear on this branch of their work that has been used in their collotype productions, then their success is already assured.

We beg to say to those who write us from different parts of the country to recommend them half-tone operators, that for 25 cents, at least, they can, through our advertising columns, get a better selection of men than we can furnish.

#### HOW TO POLISH HALF-TONE SCREENS.

Process workers everywhere will be glad to get the following expert advice as to the cleaning of half-tone screens and the prevention of sweating in cold weather. The information is from Mr. Max Levy, of Philadelphia:

It would seem a simple matter to polish the surfaces of a screen. Many things seem simple to do, and are so if no regard is paid to the

way in which it is done-I mean the thoroughness.

The screen cannot be satisfactorily polished with paper. Chamois is not good, on account of the peculiar manner in which dust particles adhere to it. The best thing to use is a piece of white china silk, which has been washed in warm water, and all sizing removed. This polishes the surface much more quickly and thoroughly than paper, and is, in-

deed, the best thing I have been able to find for the purpose. It is, of course, understood that the silk must be kept in a clean pasteboard or wooden box, which is used for nothing else. Sometimes the surface of the glass shows a certain haziness, apparently oxidation, and in such a case the surface should be carefully and thoroughly polished with the same silk and with a thin mixture of fine rouge and water—only the grade of rouge known as "Optical," or opticians' rouge, should be employed for the purpose—and it may be necessary to maintain a brisk rubbing for half an hour or more to obtain a brilliant polish on a small space.

The removal of scratches from the surface of screens is attended with great difficulty, and had best not be undertaken. Scratches may be polished out of the Levy screens, but, so far as we are aware, only by the maker himself.

The "sweating" of the screen in cold weather, of course, arises from the condensation of the moisture from the wet plate upon the surface of the screen, and will not occur if both screen and plate are of the same temperature. If the screen is left in a cold place, or if the bath is warmed, the close proximity of the warmer wet plate and the colder screen in the holder will inevitably give rise to this difficulty, and the only way to avoid the difficulty is by avoiding the difference in temperature mentioned. If the screen is warmer than the plate, it will, of course, do no harm.

#### THE PROCESS BUSINESS IN ENGLAND.

Process work now stands triumphant. On every hand new firms are springing up, old firms are enlarging their borders, new men are being educated—more or less—in the work, and each, as he becomes competent—more or less—seems to be snapped up immediately by an employer who has more work than his hands can do, or who has worse hands than he likes to employ. Some firms are "slack" true, but from no lack in the total amount of process business. The demand is sufficient to keep every present firm, whether half-tone, collotype or photogravure, busily working during legitimate business hours. Up to the present process workers as a whole have needed to do but little in the way of creating a demand for their work, and in their advertising, etc., have merely attempted to divert a portion of the stream in their own direction. This is the position to-day—a demand fully equal to the supply, and likely to increase as rapidly as the supply can do, for some few years at any rate.—The Photogram.

#### INIMITABLE HALF-TONE WORK.

The very best exhibit of half-tone work that we have yet seen is found in the collection of studies made on Cramer plates that have recently been issued. The original photographs were likely the finest collection possible for the purpose. The half-tone plates were made by the Franklin Engraving Company, of Chicago, and are worthy of the highest praise. The softness and rotundity which the pictures possess is due to the double printing of each block, first in a very light tone of

ink, and then, when that ink is dry, the same block is used to print the subject again in the light ink, but this time in a darker ink and out of register.

A curious feature of these pictures is that printing them out of register is patented. To print a half-tone block on the same sheet of paper twice and have the dots in absolute register is practically impossible, but the Patent Office has made a virtue of a necessity. So now the poor printer that attempts to do double printing from a half-tone and register them is bound to fail, and is then liable to be charged with infringing. Double printing from half-tone blocks is now extensively used, so the question is likely to be raised as to the patent rights.

#### CHROMATIC COLOR SCREENS.

"Someone has announced that 'photography in colors is an accomplished fact,' a Dublin professor having discovered a way of ruling a screen with three primary colors, divided minutely on it, as in half-tone screen, and the cost of the said screen would be only some 15 shillings. This seemed like going one better on Mr. Carbutt's guinea set of color screens, but it now turns out that the statement was a hoax."

Instead of the color screens for the production of natural colors being a hoax, as termed in a late issue of *Process Work*, I would state that last year found me ruling color screens, or, more appropriate, color filters, with the primary colors, for use in the diaphragm slit and for the purpose of securing color work direct with one exposure. One of these screens with two colors ruled upon it in fine lines was forwarded by me to A. C. Austin, this gentleman in previous research in such matters having given me the cue.

It has been pointed out that in the obtaining of colors by the Lipman method, everything is endangered by the admission of white light to the sensitive plate. The experiments undertaken by us have had for their object the advancement of direct color work and the securing of true and faithful color delineations, with one exposure.

Now, by the use of a color filter of this description, any colored image impinging on the sensitive plate, registers the true vibrations or wave lengths suitable for the obtaining of perfect color delineations at one exposure.

I would like to state here that my investigations in this work were engendered by previous discoveries by my friend, A. C. Austin, of Albany. These being communicated to me by him was the result of my work in the matter; as to this gentleman, so far as I am aware, belongs the right and honor of a discovery which I consider the greatest advance towards direct color work yet made.

#### NEW HALF-TONE ENAMEL.

Numerous letters reaching me from many parts of the world, desiring to know if I have a formula for a sensitive enamel which will form a perfect resist to the acid in half-tone zinc etching. In answer I beg to submit the outcome of my latest labors in this respect and give such

instructions as will provide the workman with a compound, which, answering the above at the same time, will give first-class zine blocks which need not be heated to fusing point ere the etching can be safely undertaken.

Take of pine gum, resin, or balsam, enough to half fill a cup, over this pour a solution of lye, and digest at a temperature of 100 degrees Fahr, for several days. Stir occasionally, then pour off and neutralize. Add of this solution to the ordinary enamel sufficient to give the coated plate a slightly matt surface, drying at as low a temperature as possible. Expose and develop as usual, and when burning in see that the film is just fully carried to the glossy stage in the heating. Now commence to etch. Note.—When drying after coating be very careful not to dry at too high a temperature, else development will be impossible. The usual enamel formula can have one-third more water added to it when the addition of the resin solution is made to it. In place of the glue, gum arabic may be used. And so far as albumen is concerned, the best enamels are free from it.

Macfarlane Anderson, Northport, Washington, U. S. A.

## JOTTINGS FROM GERMANY.

Frankfort Exhibition.—Herr Bruno Meyer writes a lengthy report on the German Photographic Exhibition recently held at Frankfort. Some of the exhibits at the St. Louis Convention, notably those of Pirie MacDonald, Strauss, Stein, Landy and Baker, were sent there. In some instances the critic's remarks are amusing. This may be due to a little national prejudice and partiality, but we think that when Mr. Meyer learns that his carbon pictures are prints on Aristo-Platino, a printing-out paper made by the American Aristotype Company, Jamestown, New York, he will think more highly of American photographers and American manufacturers.

Self-Toning Sensitized Paper.—A patent for a paper which contains in the coating the material necessary for toning has been granted in Germany. The paper is made by adding gold salts to a collodiochloride of silver emulsion, and, after thoroughly mixing, coating baryta paper with the mixture. Six grams of strontium chloride and 26 grams of silver nitrate are dissolved in 1,000 grams of plain collodion, and 1 to 2 grams of chloride of gold added. The addition of a small quantity of tartaric or citric acid increases the sensitiveness and durability. With this emulsion the paper is coated, and, when dry, it is ready for printing. The prints are simply fixed in hypo and washed.

Optical Projection.—Herr Ottomar Anschutz, of Lissa, one of the pioneers of instantaneous photography, has for many years been investigating the practicability of projecting on a screen his serial views in life size in such a way that these shall be continuous and therefore natural, somewhat on the lines of the Edison kinetoscope, but of

larger size. This Herr Anschutz now claims to have accomplished, not quite satisfactorily, but so nearly so, that only a few details remain requiring further improvement.

**6** 

Liesegang's Photo Almanac for 1895 is to hand and is an interesting little book, containing several interesting articles and a number of useful formulas.

**4** 

Celluloid Film for the Direct Production of Reversed Negatives.— There are many ways, writes G. Kyrkow, of producing reversed negatives, but few of them are so positive as to always yield good results. All these processes either take too much time or are not quite satisfactory. While engaged on various processes I have become acquainted with the defects of the various methods, and have been compelled to seek some way for obtaining reversed negatives directly.

I have tried celluloid for this purpose, and have obtained most satisfactory results with the same. The process is as follows. A clean sheet of celluloid is fastened to a glass plate of similar size by means of wax. The film is coated on the edges with wax and laid, waxed side down, on a slightly heated glass plate, and pressed tightly into contact by placing it in a printing frame. The glass plate, with film adhering, is, when cool, removed from the printing frame and any superfluous wax wiped off with a rag steeped in benzine. Such films, stretched on glass plates, may be kept in stock.

The further manipulations are the same as with glass plates. The collodionized celluloid plate is sensitized in the silver bath, developed in the ordinary way, and fixed in a 3 per cent. solution of potassium cyanide. The transparent celluloid film will have become matted by collodionizing. The film negative is now intensified, washed and dried. Flowing the film with oil of rosemary will remove the matt effect, and a glass-clear negative will be obtained. By a slight heating of the glass plate the negative may be stripped off and the wax on the back may be wiped off. The following are among the advantages of this process: The facility of production; the usefulness of the negatives as reversed or direct; the lightness of the negatives and their freedom from liability to breakage, and absence of stretching or alteration in dimensions.

Fuming Albumen Paper.—Herr Wilde, of Gorlitz, says that the fuming of paper can be simplified by exposing the paper, before sensitizing, for ten to fifteen minutes to the influence of ammonia, in a closed box.

Ink for Writing on Glass.—An ink that is not affected by water, and which is good for writing on glass, is obtained by mixing 15 parts of turpentine with 10 parts of shellac, 3 parts Venice turpentine, and 3 parts of fine lampblack.

A German Patent.—A patent has been granted for the application of the permanganate salts for the removal of hypo from plates and

prints. After fixing, the plate or paper is laid in a weak alkaline solution of potassium or ammonium permanganate. A 1 per cent, solution is recommended. Fifteen minutes' washing in water will then suffice.



Mechanical Reduction.-Dr. J. Precht, of Heidelberg, discusses the mechanical reduction of negatives, this method being particularly useful for local reduction. To reduce parts only of the negative, the rubbing of the film with a cotton tuft moistened with alcohol is generally recommended. Dr. Precht prefers grinding the film with fine emery and chamois skin. After the film has been hardened in chrome alum, a small quantity of the finest emery is dusted on, and the parts requiring reduction are rubbed carefully with chamois. For negatives where halation is much in evidence, this method will be found useful.

## **6**3.-OUR ILLUSTRATION.

UR frontispiece is printed from a series of negatives especially made for illustrating the Bulletin by Landy, of Cincinnati. Particular attention is called to the Aristo-Platino paper on which the prints are made. With this printing-out paper, any tone, from a warm sepia to a dead black, may be obtained. Our printer furnishes the following details regarding the making of these illustrations: "After printing considerably darker than is usual with most papers, the prints are well washed. This is a very easy process, for the prints do not curl, but lie flat, like albumen paper. The first washing is done in but little water, the prints being flattened down to expel air bubbles. After two washings, separate the prints, and then continue the washing until the water is perfectly clear.

"In toning Aristo-Platino a bath of water and gold, with sufficient borax to produce slight alkalinity, is all that is necessary. Enough gold is used to ensure proper toning in about ten minutes. For warm sepia tones a weaker bath is used. Fixing is done in a solution of I ounce of hypo in 12 ounces of water. Ten changes of water will suffice for washing, if the prints are well separated by hand."

It is a fact worthy of note that our printer toned three thousand prints in three hours and twelve minutes, and mounted them with the aid of an assistant in four hours forty-six minutes.

## SOCIETIES.

NEWTON CAMERA CLUB.—This club is thriving, and its outlook for summer is excellent. At the meeting, on February 6th, the following officers were elected: President, F. O. Stanley; Vice-President, Dr. E. B. Hitchcock; Treasurer, F. W. Sprague, 2d; Secretary, T. M. Clark. Board of Directors: E. E. Snyder and Austin S. Kilburn.

THE MYSTIC CAMERA CLUB.—The annual exhibition will be held on April 19th, 20th, 22d, 23d and 24th. All exhibits must be in the hands of the Executive Board by March 25th. Ladies' night, on February 21st, was a great success.

Lowell Camera Club.—On February 14th the Club entertained about one hundred and fifty members and friends, the object being to increase the interest in photography. Many lantern slides were exhibited, among the gems being W. H. Dodge's Mt. Kinco and Moosehead Lake. The talking was done by Secretary R. A. Hale, and a very enjoyable time was spent.

**6** 

AMERICAN INSTITUTE, PHOTOGRAPHIC SECTION.—At the February meeting a "sample lot of lens fittings" was presented to the Section by the Royal Photographic Society of Great Britain. The set consists of a series of flanges for fixing lenses to camera boxes. By the system under which these are made, lenses of all makers using this system will fit all flanges. The threads of the screws are such that three turns of the lens tube makes all fast, without any chance of a "drunken thread." The threads engage at once and are brought to a solid bearing with the greatest ease. They are so made that the flanges of any one lens will fit into the flange of the next larger, and so on, from the smallest to the largest. In this way lenses may be changed without the aid of a screwdriver, and a multiplicity of front boards is avoided. The set presented are finely mounted in a polished glass case with locking-door and are easily accessible for examination.

By order of the Institute these samples are freely open to all manufacturers who desire to adopt them, and copies of a paper on lens fittings and specifications, showing details, may also be had free of charge by opticians and manufacturers.

**6** 

Boston Camera Club.—The seventh annual Club exhibition will be held in the Club-rooms through the month of April, and will be open to the public for a portion of that time. Blank forms of entry will be sent to each exhibitor, to be filled in and returned for assistance in the early preparation of the catalogue. Each member is appealed to personally, with the hope that this exhibition may be made an even more worthy representation of club work than ever before.

Any photograph, never before shown at a competitive exhibition of the Club, may be entered.

Prints may be made, by any process, from negatives made by exhibitor, and must be mounted; preferably singly and not framed. No mount shall be smaller than 8 inches by 10 inches.

All information must be omitted from the front of mounts; but the title of the picture and a statement as to how much is the work of exhibitor, for the use of the judges, must be written upon the back of each. The name of the exhibitor should be omitted, but, as a means of identification, some designating mark substituted in place, which should also be duplicated upon the entry blank returned to the Committee.

Six diplomas are offered for excellence in photographic art, which the Judges may award as follows:

- I. For the photograph or exhibit having the most artistic merit.
- 2. For the photograph or exhibit technically best.
- 3. For the best portrait.
- 4. For the best figure composition.
- 5. For the best study in "Home Portraiture."
- 6. For such exhibit, in part or in whole, as the Judges may deem worthy of an award.

No exhibitor will be entitled to receive more than one diploma; but, in case a portion or the whole of any exhibit should be selected by the Judges as worthy of more than one award, it will be so designated.

Preference shall be given, other things being equal, to the work entirely done by an exhibitor.

All photographs entered will be submitted to the following judges: Mr. Thomas Allen, Mr. William H. Downes, Mr. D. B. Vickery.

All exhibits must be sent to the Club-rooms, addressed to the Entertainment Committee, not later than March 15th. Anything received after that date will be excluded from the catalogue and from competition.

Buffalo Camera Club.—"When I wrote in the February Bulletin concerning our intention to give a public exhibition of the photographs entered in the amateur contest under the auspices of the *Illustrated Buffalo Express*, the project seemed so simple of execution that it did not cause the least apprehension of the difficulties which afterwards presented themselves and which were overcome so successfully in the end.

Five thousand photographs were sent in to this contest, and from these, eight hundred were selected by us for exhibition. Even those who entered the contest and, as a matter of course, gave close attention to the matter from first to last as the progress of events in that connection was noted and commented on in the *Express*, had little or no conception of the magnitude of the scheme, nor of the amount of work devolving upon the committee of judges, to say nothing of the work involved in receiving, assorting and caring for the photographs before the judges were called upon to perform their duty.

The photographs ranged in size from 2 x 2 to 18 x 22 inches and the mounts were of all sorts, some on plain bristol board, some on plain or ornamental cards of all thicknesses up to three-eighths inch, while some were unmounted and none of them framed. The problem to be solved was how to arrange them so as to be conveniently accessible to view, and have them well lighted. Let some of your readers try to realize the amount and kind of work to be done to accomplish our wishes, and I think that when they know the result of our efforts they will give the Club credit for having conferred a great favor upon the public at large, as well as upon the great number of amateurs not connected with any club.

Our time for preparation being very short, the number of interested members willing to assist being few (as is the case usually), and knowing there would be a crowd to care for, as the exhibit was to be public, we did not attempt to group or classify the prints, simply placing them in a fairly good orderly disorder, and we are now well satisfied such was the proper and better way to do under the circumstances, for we observed that when visitors became crowded and were compelled to move along to make room for those following, they passed on and found at other places the same kind of prints and so could continue their examination and were on the whole better pleased than if they had been obliged to wait for an opportunity to get a view of any special work.

We first provided temporary supports for the prints by erecting tables 16 feet long with sloping surfaces at an angle of about 30 inches and each side 3 feet wide. This gave an area of 96 square feet on each table, in all providing space for about seven hundred prints, large and small, placed closely together and held by ornamental tacks, and, as I said before, without any attempt at classification. The very largest of the prints, together with other work illustrative of the methods of the *Express* in reproducing small work in their illustrated issues, were hung upon the walls.

This arrangement of the prints will perhaps be more easily understood from a remark made by my five-year-old daughter while describing for her mother what she saw at the Club's rooms. She said, "Mamma, they were just tacked down on tables, kind a slanting like, on both sides."

To arrange suitable lighting for the evening exhibition was our next task. Our rooms are fitted with side lights only, and these not being available to any extent we must devise other ways. We were loth to enlist the aid of plumbers, gas-fitters or electricians, knowing full well their proneness to adopt almost any expedient to relieve their victims of any surplus coin of the realm in their possession, so we procured a number of double student lamps from our friends and these, supplemented with a few piano and banquet lamps, gave ample and satisfactory lighting; and further, the effect was as novel as it was pleasing and restful to the eyes. With the addition of a few graceful palms, loaned to a friend a florist, the rooms were ready and the doors thrown open.

From this time the rooms were througed by visitors until far past the hour set for closing, and when at last we closed the doors there still were a number there, reluctant to leave.

We intended to have but the one public reception, but our personal objections were

not to be considered when stronger ones were urged against closing the exhibit, and so we yielded to the earnest solicitation of representatives of the press and of our other friends, and the exhibit was kept open two more days for amateurs and other artists during afternoons, and for the public during evenings.

It is a modest estimate to say that two thousand people viewed the exhibit (that means a big crowd for us). Many left the rooms assuring us that they did so unwillingly, for they had only given a few moments to a matter that required hours for

completion.

The officers and other Club members present were kept busy receiving their artist friends and listening with pardonable pride to their compliments and heartily expressed praise, not only for their personal efforts in arranging for the exhibit, but for the more far-reaching effects which must follow, giving the public so great a photographic treat and for the great benefits conferred by showing what amateurs are doing and what they must contend with in entering similar contests, as the rules governing the judges grow more strict and exact in their application as the grades of work increase in merit.

The citizens of Buffalo have much cause to thank the Illustrated Buffalo Ex-

press and the Buffalo Camera Club for this entertainment.

It is not at all probable to occur again very soon, unless certain difficulties which we met with are greatly reduced or entirely removed. Yet, on the other hand, events may determine otherwise and cause us to willingly meet and overcome the same or greater difficulties, and find our reward in the impetus given to amateur work among

an appreciative public.

There were many separate incidents and some general features to be observed while the exhibition was in progress which would interest your readers if related, but this letter has grown to proportions which astonish the writer, and my only excuse is, that I want all other amateurs to know what a success the exhibition was and that the Buffalo Camera Club is quite a lively concern, even if small in numbers."

WILLIAM J. HASKELL,

Secretary.

₩ħ.

Central Camera Club, Brooklyn Y. M. C. A.—At the Annual Meeting the following officers were elected: President, William H. Lowery; Vice-President, F. F. Braillard, Jr.; Secretary, B. A. Burger; Treasurer, E. A. Crowell. At the close of the meeting, the members adjourned to the Hotel St. George to enjoy their annual dinner. Of particular interest was a photographic bill of fare, and a delightful evening was spent.

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NEGATIVE BY
ARTHUR & PHILBRIC,

PRINTED ON "ARISTO-PLATINO" PAPER.

STUDIO WORK.

## ANTHONY'S

# Photographic Bulletin.

#### EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

VOL. XXVI.

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No. 4.

## ARISTO-PLATINO.-GOLD AND PLATINUM TONING.

OUR illustrations, particularly the actual photographs that have recently embellished our pages, have called forth many enquiries from photographers, professional and amateur. Our comments on the relative advantages of collodion and gelatine papers have not been allowed to pass unnoticed, and every letter received has contained evidence supporting the stand taken by us. We recently had occasion to address a flourishing Brooklyn amateur photographic society, and found that the members had discarded gelatino-chloride papers because of their lack of permanency. It seems that such papers have served their purpose, have weaned the photographer from albumen paper, and have been the stepping-stone to the universal use of the best paper for general work, collodion emulsion papers.

It has been rumored that some of the so-called collodion papers do not contain any collodion, but are more or less complex mixtures of doubtful permanency. We would urge photographers to use only materials concerning the composition of which they have no doubts whatever. Price, after all, should cut a minor figure; permanency and a capacity for faithfully rendering all the good qualities found in the negative are the qualifications that should be insisted upon. The best is none too good for the photographer.

The season is fast approaching when the amateur can with comfort indulge in printing, and it is necessary that he should decide upon the paper to be adopted. It has been urged by the few who have never worked collodion papers that the manipulation of these latter is attended with difficulties, such as curling and cracking, but these difficulties exist only in the warped minds of prejudiced parties. Our illustration is printed on Aristo-Platino paper, the latest product of the American Aristotype Company. This paper is entirely free from any

tendency to curl, and may be bent double and rubbed down without exhibiting any signs of cracking. At the meeting referred to above one gross of  $6\frac{1}{2} \times 8\frac{1}{2}$  prints were toned in gold and platinum, fixed, washed and mounted, without the loss of a single print.

In discussing the paper best suited to the photographer it is well to consider in what direction the popular taste lies. The demand for extremely glossy prints has declined, and the general tendency is towards matt-surface prints. The photographer in these busy times requires a paper ready for use, and also a printing-out paper. With papers that are subjected to after-development there is always considerable loss of time and material. A paper, to be of general service, must be uniformly good and capable of yielding uniform results. Platinum and carbon papers offer many difficulties to the average photographer, but Aristo-Platino seems to combine the virtues of both with the added advantages of being a printing-out paper and easy of manipulation. While being a matt-surface paper, there is still a perfect preservation of detail and a pleasing rendering of the delicate half-tones present in the negative. Reference to our illustration will confirm our remarks. Again, any tone, from a warm sepia to a dead black, and even to a beautiful olive, may be readily obtained, and the paper may be worked in the simplest of toning baths.

Our illustration has been passed through two toning baths, and will, we believe, stand any test for permanency. The printing was carried somewhat further than is customary with glossy paper, and all the frames were covered with tissue paper, to obtain the most brilliant results. After washing in five changes of water—a simple operation, as there is no tendency to soften or curl—the prints were toned to a sepia color in a toning bath of water and chloride of gold, made neutral with borax. The prints were then washed in two waters and toned in

the following bath:

S	1
Potassium chloro-platinite	2½ grains.
Potassium emoro-platimite	1 drom
Phosphoric acid, C. P	$\frac{1}{2}$ dram.
	60 ounces.
Water	oo ounces.

Potassium chloro-platinite is not easily obtained of the proper purity, and the latter part of the batch of prints were toned in a bath in which E. A. Platinite, a pure article made by our publishers, was used, the bath being made up as follows:

E. A. Platinite	15 grains.
Tantania acid	225
Citric acid	75 ''
Water	
vv auci	

This is the stock solution. For toning, 30 ounces of water are added to each ounce of stock solution. This bath has been thoroughly tested, and many prominent photographers are now using it with entire satisfaction. The toning was continued in this platinum bath until perfect blacks were produced, with no trace of warmth or purple in the deepest shadows. After this bath the prints were washed in two changes of water, and fixed for eight or ten minutes in a fresh hypo bath, made by dissolving I ounce of hypo in 20 ounces of water. The prints were afterwards well washed.

At first sight this may seem a tedious process, but our large batch of prints were put through in an incredibly short time, and the results leave nothing to be desired. To those of our readers who are in doubt as to the paper that will yield the most uniform and perfect results with the least trouble, we would strongly recommend Aristo-Platino. It is not necessary to use the after-bath of platinum in order to obtain pleasing black tones; these may be obtained in the gold and borax bath by simply carrying the toning far enough. But, after using the platinum bath, we think that it will be adopted.

## ITEMS OF INTEREST.

WE are glad to have matter published in our journal commented on and quoted by our contemporaries. We would, however, ask editors who so quote us to give us our full name, Anthony's Photographic Bulletin.

At the International Exhibition of the Photographic Society of India, held at Calcutta during the month of February, the following awards were made to American exhibitors: Landscape—silver medals to Alfred Stieglitz, for "Early Morn," and to Rudolf Eickemeyer, Jr., for "After the Rain"; bronze medals to W. B. Post, for "Winter in the Park," and to W. H. Jackson, for "Ouray, Colorado." Genre pictures and studies—silver medal to Miss E. J. Farnsworth, for "La Cigale"; honorable mention to C. B. Moore, for "Marbles." Special medal, presented by the Viceroy of India, for the best picture in the exhibition, awarded to R. Eickemeyer, Jr., for "The Kittens' Breakfast."

The first convention of the Northwestern Photographers' Association was a huge success, and all who attended it have reason to congratulate themselves. Some of the most prominent authorities on photography gave practical talks and imparted much good, solid information. Some of "the only Charlie" Hetherington's remarks on the studio in general will be found in another part of this issue. John Edgeworth, known the country over as demonstrator for Cramer's dry plates, made some pointed remarks on lenses which are well worth preserving. These we print below.

"Ir you were going to make views you would naturally take a rectilinear lens; if to make portraits, a portrait lens. I do not think that any one present would pick out the portrait lens to make views with. But how many of you are making portraits with view lenses? The manufacturer made them for views and groups; they were not manufactured for the making of portraits."

"One man has a very ordinary gallery, but has picked out a first-class portrait lens; his work is very soft, round and beautiful. His competitor, to out-do him, fits up a beautiful place with fine accessories; the lens he buys is a cheap rectilinear, because he is told his pictures will be sharp. But when he compares his work with that of his com-

petitor, he wonders why his pictures are hard, with nothing in the blacks, no half-tones and little definition in the whites. He may use the same plates, chemicals and paper, but his results are altogether inferior."

"This country has been flooded with cheap lenses, many of them being wrongly adjusted. There may be pearls among them, but they are few and far between. They are made of glass and brass, with lots of brass. I have often been asked why the sample pictures I carry look so different from those usually displayed in show-cases. I invariably find that the poor pictures are made by men using rectilinear lenses."

"Regarding the care of lenses, I would recommend that they be cleaned every week with alcohol and polished dry. Do not let your lenses get so that you can write your name on the glass. If your eyes are dim you cannot see. Neither can the lens."

One of the principal features of the Convention was a demonstration of the Anthony electric light apparatus, Charlie Hetherington, with the aid of a female model, demonstrating its possibilities. There seems but little doubt that a revolution is setting in, and ground-floor galleries with electric light and flash light are daily springing into existence.

Mr. Mora, of the Eastman Kodak Company, said: "Good clean prints cannot be expected from a dirty printing-room. Remember that it is absolutely necessary to have your printing and toning room, as well as your trays, clean, if you expect good prints. In vignetting the greatest fault of the average printer is that he places his vignette too close to the negative, and does not allow room enough for that diffusion of light so necessary for the gradual blending which constitutes the beauty of a perfect vignette."

"In printing from a weak negative be sure to print it where it will print slowly, as this method will give a much stronger print than if printed in the sun." Mr. Mora contended that all Aristo prints were permanent if properly handled, whether same were gelatine or collodion, and claimed that insufficient fixing had more to do with prints discoloring and fading away than any other cause. Printers, he said, tried to fix too many prints in a given quantity of solution. On this point of permanency Mr. Mora met with considerable opposition.

The next meeting of the Northwestern Photographers' Association will be held at Minneapolis.

——~;<del>;;</del>;

Photographers should make up their minds to attend the convention of the Photographers' Association of America next August. It will be the best yet, and a very important matter concerning the future of

the Association will be brought forward by the Executive Committee. During the last few years many States have organized associations, and it is proposed to construct a new constitution and set of by-laws for the Photographers' Association of America. Full details will be published in our May issue, and in the meantime we would say that the changes proposed contemplate the uniting of State organizations every three years, to form, as it were, a congress of the States.

At the Hackney (Eng.) Photographic Society Mr. S. J. Beckett, speaking on "Studios and Darkrooms," said that the object of a studio was to have under control the means of modifying the light on a subject. A great quantity of light was unnecessary; on the contrary, a little disposed of in a proper manner was all that was required. In

choosing the position for a studio, the site at disposal would, of course, regulate the choice, but a north or northeast aspect was to be preferred. The form of structure known as a half lean-to was the best. The roof should be strong, but light. Care should be taken in choosing the glass, remembering that the clearest glass stopped 10 per cent. of the light; so samples should be compared and the whitest chosen. It should not be thinner than 31 ounces, in order to lessen the chances of breakage. The length of the studio should not be less than 20 feet, but a convenient size would be 30 feet long, 9 to 15 feet wide, 12 feet to ridge, and 8 feet to the eaves. Three feet at each end of the roof might be opaque, the rest glazed and shaded by means of blinds of indigo twill, suspended by



MADE WITH ANTHONY'S ELECTRIC LIGHT.

rings upon piano wire stretched from end to end. These blinds should be in two parts, and should be so arranged that when stretched to their fullest extent they would shut off all light. The internal walls should be painted a dead gray in flatted oil color.

We have seen the proofs of a revised edition of our publishers' Professional Catalogue, and note therein the issuance of several new lenses manufactured by Dallmeyer. Among others are a 2 D patent group lens, a 5 x 8 rapid rectilinear, and a full description of the telephoto lenses, including the low-power attachment for compound telephoto lenses adapted especially for the making of instantaneous pictures.

#### PHOTOGRAPHY IN EUROPE.

#### THE ACETYLENE LIGHT.

In London during the past month, cold, misty, unhealthy weather of the worst description has been spreading sickness and death in all directions, so as to tell upon the amount of attendance at places of public resort, photographic societies included. In the provinces it has not been much better, and the prevailing epidemic is influenza. Over most of continental Europe the public health has been bad, and at a recent meeting of the Photographic Society of France some of the officers most regular in their attendance were absent, I presume through illness.

The subject which has attracted most attention in London photographic circles of late is the acetylene light, and it originated with the recent discovery made in America by Mr. T. L. Willson, of the Aluminium Company, at Spray, N. C., that calcic carbide can be made cheaply by means of electricity, and Wöhler having discovered in 1862 that acetylene is liberated from calcic carbide by simply treating it with water. The only supply of this cheap calcic carbide which has yet reached England has been received by Professor Vivian Lewes, of the Royal Naval College, Greenwich, and he gave a lecture upon it recently before the Camera Club, where it excited much interest. Some of the technical journals were jubilant about cheap acetylene as a new radiant for the magic lantern, but after calmer consideration they may have to moderate their joy. The gas is poisonous, and a few bubbles of it which escaped into the room before ignition gave the meeting hall of the Camera Club the smell of "rotten onions, with a dash of garlic"-as Professor Lewes put it-all the rest of the evening. The idea of the proprietors is said to be that acetylene, liquefied by pressure, may hereafter be sent out in iron bottles, but if one uses compressed gas at all in a dwelling house, it is as well to use compressed oxygen at once, so far as the magic lantern is concerned. The advantage of acetylene for the lantern would be to drive oil lights for the lantern out of use, the acetylene light being much more brilliant, and for this purpose a steady supply, under no pressure worth mentioning, might be advantageous, provided that by careful manipulation none of it is allowed to escape into the room unburnt. Professor Lewes' method of generating it at the Camera Club was simple; he put about 1/2 a pint of small lumps of calcic carbide into a 3-pint flask, then allowed water from a dropping bottle to fall upon it through a stopcock at the rate of about one drop in two seconds; the flask grew intensely hot, and as the gas came off it was conveyed through a tube in the cork of the flask to a gasometer, in which it was stored for use during the lecture. Special burners, giving a flat, thin flame, were used, to avoid smoke; the smallness of the flame is an advantage for the lantern, a small radiant having optical advantages. The flame, also, despite its richness in incandescent carbon particles, is highly transparent to light, so that the illumination may be strengthened by placing one flame behind another, which is better than arranging three flames, "end on," to the condenser, a plan which gives unequal illumination of the screen.

One point about this cheap calcic carbide was not mentioned at the meeting, and we forgot to question the lecturer thereupon, namely, that the acetylene which it yields is not pure, but contains sulphur from the coke used in the manufacture of the carbide. Did this sulphur intensify the particularly abominable smell? We all know that, in common house gas, sulphur is the most troublesome constituent which it is the business of the gas manufacturers to eliminate. Willson makes the calcic carbide from an intimate mixture of powdered lime and coke, by submitting them to the heat of the electric furnace; the method of manufacture is new, but there is nothing to prevent anyone making calcic carbide by other methods. Wöhler's discovery, already mentioned, of the production of acetylene by pouring water upon calcic carbide, was first published in Liebig's Annalen der Chemie for 1862. There is no certainty that Willson's carbide will be put on sale here in small quantities; if not, it is unlikely to come into use for lantern purposes. The proprietors at present, according to rumors which have reached me, seem to be thinking chiefly of making acetylene to enrich common gas, on a large scale, and perhaps to sell it compressed in iron

There is, practically, no blue part to the acetylene flame; the whole is highly luminous. Ethylene is the chief illuminating constituent of common coal gas, and acetylene gives a flame more than three times as brilliant as that of pure ethylene, the relative brilliancy of the two being as 70 to 240.

Mr. Francis Cobb, who was in the chair, pointed out to the Camera Club that acetylene being a pure gas, the light it emits under a given pressure from a given burner is constant, which, taking the brilliancy of the flame also into consideration, would seem to make it useful in photographic enlarging.

# DETERMINING THE POSITION OF THE NORTH POLE BY PHOTOGRAPHY.

Unless I am much mistaken I read an account long ago of an American astronomer, perhaps Professor Pickering, carrying on photoastronomical experiments to determine the exact position of the North Pole. However that may be, M. G. Flammarion has contributed a paper on the subject to the Academy of Sciences at Paris, which was read on the 25th February last, with M. Loewy in the chair. Flammarion set forth that the position of the celestial pole is continually shifting among the stars, in virtue of divers movements of the earth, the chief of which is that of the precession of the equinoxes; these perpetual changes can be determined with great precision, by fixing photographic apparatus pointing to the pole, and allowing the stars near the pole to mark their circular orbits upon a sensitive plate, as the apparatus is carried round by the rotation of the earth. Flammarion says, that in the winter of 1869-70 he made his experiments in this relation, and published the results in Vol. VI. of his Etudes sur l'Astronomie, date not stated, accompanied with a circumpolar star chart. Last autumn M. Fleury-Hermagis placed at M. Flammarion's

disposal at the observatory at Juvisy an excellent 6-inch photographic objective, and Messrs. Lumière supplied him with plates of remarkable sensitiveness, so on fine nights, free from moonlight, he pointed his apparatus to the pole, and left the stars to mark their paths upon the plate; the exposures were of two, four, and six hours' duration. On the negatives were circular traces of 30, 60 and 90 degrees, of a considerable number of stars of all sizes, the bigness of each trace depending upon the photogenic intensity of the light of the star and the rapidity of its movement; this rapidity becomes less the nearer it is to the pole, and at the pole it is nil. The negatives measure 18 x 24 centimeters and the field of view extends to a minimum of about 6 degrees polar distance; the traces of more than two hundred stars are recorded. Flammarion says that the harmonious and tranquil movement of the earth is demonstrated in these photographs by traces made by the stars themselves. He submitted to the Academy a photogravure copy of one of his negatives, taken on the night of September 6th, last, with an exposure of four hours.

#### DAGUERRE'S BIRTHPLACE.

A MOVEMENT is on foot, in which the Photographic Society of France is taking an active part, to erect a monument to the memory of Daguerre, in the commune of Bry-sur-Marne, in which he was born; the subscriptions are all to be of small amount each. The committee of organization of the subscription has an engraving of a magnificent portrait of Daguerre, copied from a miniature by Millet dating from 1827. The plate has been executed by M. P. Dujardin, and one impression thereof on Chinese paper, with a broad margin, will be given to every subscriber to the monument, thanks to the exceptional terms charged by M. Wittmann for the execution of the work.

#### A SIMPLE LANTERN-SLIDE EMULSION.

A LITTLE after the year 1880, when photographers were commonly making their own gelatine emulsions, and the photographic journals were full of formulas about that class of work, it may be remembered how certain geniuses tried to simplify the appliances, so as to bring them within the range of utensils to be found in every kitchen The stone ginger-beer bottle became a great institution, because it protected the emulsion from the action of light, and when it was not more than a quarter-filled with emulsion, that emulsion might be distributed round its sides, caused to set there by the outward application of cold water, and afterwards washed for a long time in successive changes of water. I do not like the plan, but much prefer a bottle of orange glass, so that the contents may be seen when desired, and any stray black beetle promptly detected. Of course, with a glass bottle, colored or uncolored, in emulsion making, one cannot work in daylight at all, as with a stone bottle; all the operations must be performed in the darkroom.

However, Mr. Ethelbert Henry, a civil engineer, a few days ago gave a description to the North Middlesex Photographic Society of his



COPPER HALF-TONE ENG.
PHILA. HELIOGRAPHIC CO.

PRESS OF FLEMING, SCHILLER & CARNRICK.

PHOTO-ENGRAVED FROM HALF-TONE NEGATIVE ON DRY PLATES (CARBUTT'S PROCESS).

See article "Dry vs. Wet Plates," for Half-tone Engraving.

LIBRARY OF THE UNIVERSITY OF ILLINOIS method of making a lantern emulsion. He puts 5 ounces of tap water into a stoneware ginger beer-bottle, common salt 100 grains, hard gelatine 125 grains, and allows them to remain all night. In the morning the bottle is placed in hot water, to dissolve the gelatine, and 150 grains of silver nitrate are added in large crystals; the bottle is then thoroughly shaken for about ten minutes to form the emulsion, it first having been well corked and some layers of brown paper tied over the cork to exclude daylight. It is then left in a fender near the fire throughout the day, and occasionally shaken by someone willing to attend to that matter, and to see that it does not get cool enough for the gelatine inside to set. At night the bottle is turned round horizontally under a stream of cold water until it sets round the sides of the bottle, and it is here I may remark that a failure often occurs with novices in emulsion-making; the emulsion often takes a long time to set firmly enough under the circumstances to make it safe to go on with the washing. The bottle is then filled with cold water in the darkroom; this water is changed every half hour for several hours, to dissolve out and remove the soluble salts, and the last change of water had better be allowed to remain in all night. The next evening the emulsion may be drained, melted, filtered through cambric or other suitable medium, and used for coating lantern plates, which may be dried round the inside of a large and perfectly dark box. His exposures, he said, were with one inch of magnesium ribbon at a distance of 3 feet, and most developers will suit the plates; he ordinarily used a metol developer. We should expect common salt as purchased in different localities for the emulsion not to be particularly uniform in chemical composition.

#### INSTANTANEOUS SCIENTIFIC PHOTOGRAPHS.

LAST Saturday, March 9th, Lord Rayleigh was lecturing at the Royal Institution about the waves of the sea, and setting forth the results of the researches of men of science as to the infinity of their motions. When speaking of waves of water too small and too rapid to be recognized by the eye, he stated that one way of getting at the facts is to take a series of instantaneous photographs of the phenomena. A magnesium flash light, he said, might do for photographing a baby or other object which had an objection to keeping still, but is of no value for more rapid motions, such as that of a quickly revolving wheel; the electric spark is, however, rapid enough to make the spokes of the latter appear to be perfectly quiescent. By picking out, in this way, different phases, one at a time, of rapidly moving objects, it is possible to see the character of their actual motion as a whole. An enlarged image of a vibrating tuning-fork gave fuzzy-looking prongs upon the screen, yet by a method of rapid synchronous illumination he so slowed down the apparent motions that at last the prongs did not seem to approach and recede from each other more rapidly than once in two seconds. He also projected upon the screen some excellent images of bursting soap films which he had photographed by the electric spark in less than one-millionth of a second, several years ago. Each film was broken by allowing a bullet to fall through it, but this might be tried a

dozen times in succession without breaking the film. He had, however, found that when the bullet was wetted with alcohol, it always broke the film in its passage. The great difficulty in the whole task was the mechanical one of getting the electric flash at exactly the right instant to illuminate the bursting soap film and the falling bullet. The photographs were of good quality, as a rule.

#### ELECTRICAL THEORIES OF DEVELOPMENT.

LAST Monday night, March 11th, Mr. T. Bolas delivered a lecture at the Cordwainers' Hall, London, under the auspices of the British Photographic Societies affiliated to the Royal Photographic Society, in which he set forth that in 1853 Dr. J. Schnauss suggested that light threw chloride of silver into a state of electrical tension, and in 1866 Mr. Nelson K. Cherrill assumed that the metal tended to turn towards the source of light, and the halogen away therefrom. Later still, the Chief of the Photographic Department of the Russian Military Service at St. Petersburg gave out the idea that a molecular current was set up. He did not seem to think that actual electrolysis took place, but that there was a tendency towards electrolysis. Mr. Bolas then performed a few experiments illustrating the discoveries of Clerk Maxwell, Hertz and Oliver Lodge, of the existence of waves of light in some cases 30 or 40 feet long, or far too long to excite vision. They were produced at the lecture by the electrical oscillations set up between two Leyden jars. He also produced them by means of electrical oscillations set up between two copper plates furnished with polished silver knobs and excited by means of a little induction coil. He showed that the waves set up would pass through a thick slab of solid paraffin and denote their existence by the agency of a suitable indicator on the other side. The waves which give the sensation of light are about the 25 of an inch in length, and he anticipated that it would be possible hereafter to set up such small vibrations with an expenditure of infinitely less energy than necessary at present.

# THE INEQUALITY OF ILLUMINATION PRODUCED BY LENSES.

Last Tuesday night, March 12th, Mr. J. R. Dallmeyer read a paper before the Royal Photographic Society in which he gave the accom-

panying table of figures, setting forth how the illumination with a theoretically perfect lens falls off as the center of the field of view is left, and the edge of the plate is approached. He also exhibited and described an invention of M. de la Crouée, consisting of an opaque rotating disc in front of the lens, with a V-shaped sector cut out of it; the apex of the V did not reach quite to the center of the disc; this disc was slowly pulled round by a string during the exposure. Thus by hand it could be made to go quickly when exposing the sky, slowly over the foreground, and slower still when exposing on some dark object, say a clump of pine trees at

Angle of Obliquity $= \theta$ .	Illumination of Image, Cos. 4 θ.
0° 5° 10° 15° 20° 25° 30° 35° 40° 45° 50°	1.000 .985 .941 .870 .780 .675 .562 .450 .344 .250 .171

one side of the plate. The results are much influenced by the size of the stop used in the lens. With an excessively small stop the center of the field of view is dark; with a suitable medium aperture inside the lens the whole field is equally illuminated, a condition which never obtains when lenses are used in the ordinary way. He thought that the device might be useful in astronomical photography and in taking direct photographs of the sun itself. Of course, as light only reached the lens through the revolving sector, there was a great loss of light compared with that utilized when the lens was used under ordinary conditions, still not so great in practical work as might be expected.

Several speakers commented upon the excessive falling off in the amount of light towards the edges of the plate, even when using an ideally perfect lens, as set forth in Mr. Dallmeyer's figures, and expressed surprise that it did not reveal itself more markedly in photographs. Mr. Chapman Jones suggested that one explanation might be that in looking at a picture we get something like the appearance obtained when looking at the natural object, which is proportionally more illuminated in the middle than at the edge of the retina.

Mr. Debenham described a mechanical device he had constructed and was trying to obtain the same effect of equality of illumination as that described by Mr. Dallmeyer in the invention of M. de la Crouée.

W. H. HARRISON.

## A "PICTURE AND A POEM"!

A Suggestion.

WHILE it may no doubt be of great advantage to the amateur photographer to possess an artistic eye and be able to select the most suitable point of view for the purpose of rendering the most pleasing effect—both subject and composition in complete harmony—another gift has of late been claimed to be also necessary in order to convey the object or subject in a presentable manner to those who view it. In other words the amateur besides being an artist must also be a poet, or, at least, have sufficient poetical temperament to be able to select a title to his work which will, in all ways, fit the subject; and assuming he has produced a "picture"—the title should be equally pleasing to the senses. So that the amateur of the future, in order to be admitted to the "Select Circles" which are now being formed, should be required to compose a few titles, as well as present a few views, for the Committee on Election to pass upon, before he can be considered eligible to membership.

Much amusement can be afforded little circles during a leisure hour in endeavoring to select appropriate titles to be given to views which can be presented one by one (perhaps upon the screen). The suggestions made can be almost infinite in their variety, causing much merriment and very frequently indicating the characters of those who offer them.

WALTER SPRANGE.

# HINTS FROM AN EXPERT.

A T the meeting of the Northwestern Photographers' Association many practical hints were dropped by that best of all-round men, Mr. Charles Hetherington. "The artist—do not call him operator—should never permit himself to be dictated to, but should always be master of the situation, and strive to make himself so competent that he can grasp the possibilities of a subject or group at a glance, knowing just what to do with them the moment they come under the skylight."

"In sitting positions, the subject should not be placed to sit lower than the knees, as such a position makes the limbs, from the hips, stick out at right angles to the body, making very ugly straight lines, the beauty of a position lying in rounded lines and graceful curves."

"In groups of two—marriage groups—where the bride wears white and the groom black, have the groom stand in the stronger light and the bride in the shadow, so as to overcome, as much as possible, that harsh contrast so often noticeable where black and white draperies are photographed together."

"THE eye of the subject is the life of the expression. As is the eye so is the picture, either lifeless or animated, vacant or expressive, dreamy or wide awake."

"The reception room is too often neglected, either too little furniture, the same furniture continually, draperies and display pictures used too long; or else too much furniture and too many pictures, the whole making a stuffy, crowded, inartistic arrangement. Change your furniture and pictures as often as possible. Use only a few choice display photographs and arrange them in the most artistic manner."

"BE sure to have a bright person to wait on your customers; one who has an eye to business and is at the same time polite and accommodating. Have this person work for you on the percentage plan, giving her or him, as the case may be, a certain percentage of receipts. You will find this plan pay."

"The operating-room should be carefully tinted so as not to reflect bad lights upon the subject. If you can only have a few accessories, have them good. Shun cheap backgrounds and accessories; remember that your reputation as an artist largely depends on your operating-room, and you cannot afford to slight any of the details that go into the composition of your pictures. Have proper things to work with, even if you have to go without a carpet on your reception-room floor."

"In sending subjects to the operating-room always refer to the operator as an 'artist.' It will make a great difference in the impression on the subject. If you were going to have your portrait painted you

would not expect the man who was going to do the work to be referred to as the 'painter.'"

"Do not limit the operator in the use of plates. It is presumed that you have a man of ability and judgment in your operating-room, and he ought to be competent to determine the number of exposures to make to serve the best interest of your business."

The retoucher should have proofs of each negative in the sack with the negative. This is a great aid in seeing points that might otherwise be overlooked. The artist and the person at the desk should look over the proofs together, each morning, as they are the two people who come directly in contact with the subject."

"Choose the backgrounds for the subject; don't use large chairs and balustrades for small children. Work bald-headed subjects across the light and reduce the shiny effect of the skin by using Strauss modeler, one of the most useful articles in the operating-room. The darkroom should be scrupulously clean, and distilled water used for all solutions."

#### CYANOTYPE PRINTING.

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A T a meeting of the Photographic Society of Japan, Mr. K. Nakahara showed a cyanotype print, much superior to anything of the kind generally seen. It was from a mechanical drawing, line sectioned, and showed deep black, clear lines on a perfectly white ground. Mr. Nakahara described the precautions necessary to get this effect and the difficulties that were likely to be met with. Briefly put, the process is as follows:

A highly sized paper should be used. Small sheets can easily be worked, but the difficulty increases greatly with dimensions, a sheet about 20 x 18 being the largest that he had so far been able successfully to manipulate. Want of equality in the depth of the lines and staining in the whites are the defects difficult to overcome. All manipulations are with a view to avoid these.

The sensitizing solution is as follows:

Gum arabic	15 gram	s.
Tartaric acid	2 "	
Chloride of sodium (common salt)	9 "	
Sulphate of iron	10 "	
Iron perchloride	15 "	
Water	HO C.C.	

In mixing the solution, the gum arabic is first dissolved in the water by the aid of heat, and the other salts are added while the solution is still warm.

The solution is spread over the surface of the paper with a sponge, and, after allowing a little time for it to penetrate the surface, all superfluous moisture is removed, using the sponge again, well wrung out. If

this precaution be not attended to, the depth of the lines is not equal. The paper is then dried as quickly as possible. If the drying is not rapid, the whites stain.

Exposure is somewhat longer than would be needed with sensitized albumenized paper. The color of the sensitized paper is yellow. During exposure, all but the lines turns to white.

Development is by a plain aqueous solution of gallic acid, the strength of which is not important. Care must be taken not to leave the print too long in the developer, otherwise staining will result. After development the print is rapidly washed, when superfluous moisture is carefully sponged off the surface. If this precaution be not observed, inequality in the depth of the lines will result.

The success of the process would appear greatly to depend on the sponging off of superfluous sensitizing solution and water from the

surface of the paper, and on quick drying after sensitizing. .

# LANTERN SLIDES-HOW TO MAKE AND COLOR THEM.\*

BY DWIGHT LATHROP ELMENDORF.

(Continued.)

FTER several plates (fifteen or twenty) have been developed in this A one tray of developer, its action will be somewhat weakened and therefore slower. It is then advisable to throw away half of it, filter the remainder and add to it an equal quantity of new developer made up as directed in the first instance, omitting the bromide solution.

By renewing the energy of the developer in this way, a constant and even action may be kept up for hours. Never employ a developer which has once been used after it has stood for one or two days. author has tried it and it made wretched slides.

Using fresh developer is like using a boiler having a steam gauge upon it—the pressure is known; while old developer is like an old gun that has been loaded for years, it may not go off at all, or it may, and take the immediate neighborhood with it, "there's no tellin'."

After the plates have been developed they should be left in the hypo at least five minutes; a longer time is safer. If a plate is removed from the hypo about a minute after it is placed therein and examined by looking at the back of it, the edges will appear dark, while the center is still white.

If the plate is dipped in and out of the hypo, the dissolving action of the chemical may be watched. Gradually the whole plate becomes dark and all of the white visible silver unacted upon by the light and developer seems to have been removed, but this is not so.

This action goes on long after the eyes can distinguish it; therefore it is necessary that the plate should remain in the fixing solution until it is thoroughly fixed. This is essential if the slides are to be permanent. If they are not thoroughly, fixed, they soon fade and turn yellow.

<sup>\*</sup>Commenced in the January issue. Copyrighted, 1894, by E. & H. T. Anthony & Co.

Actinic light should not strike the plates while fixing. After the plates are fixed they should be thoroughly washed in running water for at least two or three minutes and then swabbed off with a wet tuft of absorbent cotton while under the tap and then placed in the alum bath. They should remain in this from two to five minutes. The exact time is immaterial.

The alum hardens the films so that they are not liable to leave the glass. The alum bath, moreover, is necessary if the slides are to be colored afterwards. After the alum has hardened the film, each plate should be placed under the tap, swabbed off with another tuft of cotton again, and then placed in the wash box and washed with cool running water for at least half an hour. If the hypo is not thoroughly washed out, it will stain the plate. It some times crystallizes in the plate long after the slide was made and ruins it.

After a thorough washing, each plate should be placed under a tap, swabbed off with cotton again, and then placed in a plate rack and allowed to dry spontaneously. The author uses a small electric fan which dries the slides in about half an hour.

When dry the slide may be mounted at once, by placing a lanternslide mat directly upon the gelatine. By moistening one corner of the mat with the tongue and pressing it quickly and firmly upon the gelatine, it will adhere firmly so that it retains its position. Then a clean cover glass is laid on top of the mat and the two glasses are bound together with gummed strips of paper.

The cover glass protects the picture from being scratched, the mat between the glasses acts as a buffer, and slides well mounted may be quite roughly handled with impunity.

If the slides are to be colored they must not be mounted until afterwards.

Sometimes a reproduction of printed matter or of a line drawing is required.

The negatives of such subjects should be intense, but clear. Negatives which are very thick and black are often called intense when not so at all. A very poor flat image is masquerading under cover of a thick mass of fog—that's all.

Clearness is an essential for line work. The lines or printed matter should appear as clear glass on the negative.

After adjusting a slide plate on the negative, it should be exposed a very short time, say, one second or even a half second; this, of course, depends upon the clearness of the negative.

The exposed plate should be developed with Anthony's hydroquinone developer without dilution, adding one or two drops of the bromide solution to 3 ounces of developer. The development should be carried on till the lines or letters appear very black and the whites just the least bit tinged by the developer, when the plate should be removed, rinsed and thoroughly fixed.

This same method of procedure will often yield fine slides from negatives which are so thin that paper prints from them are an impossibility. Very intense negatives yield but fair slides at best, excepting those intended for line work, and the like. The proper method, with the exception noted, is long exposure and weak developer.

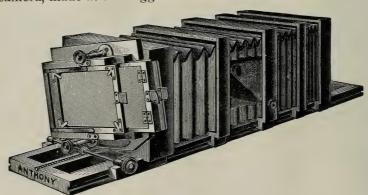
All experiments of this kind should be deferred until the reader is quite expert in making fair slides from good negatives. Like all good things, the contact method has its limitations. It is confined to the use of negatives with images of the proper size. As the largest opening in a standard lantern mat is  $3 \times 2\frac{7}{8}$  inches, the size of the image must conform to that. Frequently the image is too large, even when within these limits, and produces a very inartistic, crowded effect when projected upon a screen. The very opposite sometimes occurs, but the former is so omnipresent that it is really a tremendous fault. Often the immense size of a certain object is toned down by the proportional dimensions of others near it. If there happen to be figures in the scene, they appear as mammoths. The author once saw upon a screen the image of a dog which measured 21 feet in length. This was followed by Niagara Falls, not quite 12 feet long and about 2 feet high, not half big enough to wet the dog. It is a common thing to see human faces appear 10 or 12 feet in circumference. The incongruity of such things is apparent, and can only be avoided by making negatives which are suitable for slide purposes, or by calling to our aid the camera method.

#### CHAPTER II.

#### THE CAMERA METHOD.

This method requires a camera with a long bed and bellows to match, a lens of 4 or 5 inches' focus, and an adjustable hood, projecting in front of the lens in such a way that it extends to the frame which holds the negative, so that only those rays of light which pass through the negative can enter the lens.

The most convenient apparatus for this work is Anthony's lanternslide camera, made at the suggestion of the author.



The frame carriage for the ground-glass and the plate-holder may be oscillated within certain limits, so that the image on the slide may be perfectly vertical, even if that on the negative is askew.

This camera is adapted to the use of 4x5 negatives, either horizontally or vertically. All its parts are adjustable, enabling one to enlarge or reduce the size of the image at pleasure. A flap shutter is placed



PHOTO-ENGRAVED BY CLARK & GEIGER.

PRESS OF FLEMING, SCHILLER & CARNRICK.

NEGATIVE ON CLIMAX PLATE.

STUDY BY HEMPERLEY.

LIBRARY OF THE UNIVERSITY OF ILLINOIS just back of the lens frame, with an indicator which shows whether the lens is open or closed. This is an excellent piece of apparatus, and is not expensive.

Larger cameras are manufactured, so that negatives of any size may be reduced to the proper lantern-slide size.

When a slide is to be made in this camera, the lens is first screwed into its front board and put in place; the negative is placed in the frame at the end of the camera farthest from the ground-glass, in such a way that the gelatine side is toward the lens and the image is upside down.

Then place the camera against a window at such an angle that it points directly toward the sky (not the sun), resting the lower end upon a table, or it may be directed toward a large piece of white cardboard brilliantly illuminated by daylight.

The lens frame is then pulled back from the negative the distance which the lens requires to form the image of the desired size. This distance depends upon the focus of the lens, and must be ascertained by experiment. Suppose it to be 14 inches. Then move the ground-glass

carriage back and forth until the image upon the groundglass is very sharp. This image will be right side up, but right for left as one sees himself in a mirror. If the image is too large, the lens must be moved farther from the negative and the focus obtained again. If too small, the lens must be pushed nearer to the negative and the focus adjusted again. After the camera is once



nicely adjusted for the average negative, the positions of the lens frame and ground-glass carriage should be marked in order that time may be saved on some future occasion.

A small stop or diaphragm should then be placed in the lens, for two reasons: it makes the image very sharp, and it increases the time of exposure, which is convenient when working by daylight.

When the camera is pointed at the sky there is a certainty that the negative will be evenly illuminated, whereas care must be taken if the light is reflected from a white screen. The screen must be adjusted at such an angle that the light will be reflected directly through all parts of the negative equally, and the screen or cardboard must not be too near the negative. If it is, a nice image of it will appear on the

slide together with that of the negative, and will probably give rise to "cuss words."

Having secured a satisfactory illumination, the shutter is closed. A slide plate is put into the little plate-holder in the darkroom by nonactinic light.

The holder is then placed in its proper place in the camera, the slide

drawn, and the exposure given by turning the shutter.

The length of exposure depends upon the lens used, the size of the stop or diaphragm, the size of the image, the negative, the time of day, the season of the year, and, lastly, the state of the weather or of the sky. Direct sunlight should not be used.

The only invariable quantities are the lens, its stop and the standard negative and developer. All the others are unreliable, and have to be

tested by many experiments.

This method must not be attempted by those who are not able to make a good slide by the contact method.

To illustrate the extreme variability of daylight, the exposures given upon one negative, just for experimental purposes, will be outlined.

January 7th.—Clear, at noon, one minute; 3 P.M., one and a half

minutes.

January 8th.—Stormy, at noon, two minutes; at 3 P.M., four minutes. January 9th.—Cloudy, at noon, one and one-fifth minutes; at 3 P.M., two and a half minutes.

January 10th.—Cloudy, at noon, two minutes; at 3 P.M., five minutes. January 12th.—Clear, at noon, forty-five seconds; at 3 P.M., one minute.

January 18th.—Clear, at noon, forty-five seconds; at 3 P.M., one minute; at 4 P.M., two and a half minutes; at 5 P.M., seven minutes.

Lens, Dallmeyer 4 x 5 rapid rectilinear.

Stop, f/64.

Plate, Cramer lantern slide.

With an ordinary negative a lens of the rapid rectilinear type with a small stop, f/64, and upon a clear day at noon in January, an exposure of one minute should be tried; in March, a little less; in May half the time will suffice, etc., etc.

Using such a small stop, the variation of a few seconds in the exposure either way will not amount to much, because the plates are

quite slow.

The standard developer for this work is 4 ounces Anthony's hydroquinone developer plus 2 ounces of water and no bromide. The development should be carried on exactly as directed for the contact method. If the exposure was too long, the plate will develop rapidly, and will be smoky; if it was too short, the plate will come up to a certain point and stop, and all the dodges in the world wont help matters in the least.

To use the camera method by gaslight, another and a rather expensive piece of apparatus is needed, and that is a condensing lens of

greater diameter than the diagonal of the negative.

The author's apparatus is arranged as follows: The Anthony lanternslide camera is adjusted as if for daylight, and placed upon a large table. The negative is put in place, and a pair of 8-inch plano-convex lenses, called a condenser, adjusted in front of, and as near as possible to, the negative. A Welsbach incandescent gas burner is then ad-

justed before the condenser, so that the image on the groundglass is evenly illuminated. Some care is necessary that the lens, the negative, the condenser and the gaslight are properly centered, in order to obtain an equal illumination.

This arrangement is nothing but a modified magic lantern, using the sensitive slide plate as a screen. The exposures are



regulated by the flap shutter as before. The great advantage of this arrangement is that the light never varies and the results are uniform.

The Welsbach burner yields a beautiful, powerful white light, and has only one drawback, and that is its delicacy. The carbon net or cone is so delicate that a sudden jar will break it into thousands of pieces.

(To be continued.)

#### THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

A T the meeting of the Executive Committee of the Photographers' Association of America Mr. C. M. Hayes was elected Secretary in the place of Mr. Pirie MacDonald, whose resignation was accepted with much regret. The books showed a balance of \$989.56. The date of holding the Convention is from August 6th to the 9th, inclusive. The use of the Museum of Art Building has been granted. A motion to instruct the Treasurer to pay the duty on such foreign exhibits as were accepted for exhibition was carried.

#### LIST OF AWARDS.

The Special Prize.—An elaborate silver cup for the best illustration of Ella Wheeler Wilcox's poem, "Maurine."

One picture 13 inches or larger; to be framed at the discretion of the exhibitor, with or without glass; the standard of this award must be 21 points out of a possible 30.

Genre Prize.—A diamond charm; three pictures 13 inches or larger, on any matt-surface paper; subject to be chosen by the photographer; the title to be appropriately inscribed on each picture; to be framed at the discretion of the exhibitor, with or without glass.

The Grand Prize.—A bronze or marble figure piece, published later (portrait photography exclusively); thirty-six pictures, exhibit to consist of twelve cabinets, twelve Paris panels, and twelve pictures 13 inches or larger.

Class A.—Six pictures, 16 inches or larger; one gold medal, one silver medal, one bronze medal, and one diploma.

 $Class\ B.$ —Twelve pictures, Paris panels, to 16 inches; one gold medal, one silver medal, one bronze medal, and one diploma.

Class C.—Twenty-four pictures, cabinet to Paris panels; one gold medal, one silver medal, and three bronze medals, and one diploma.

Class D.—Rating Competition, twelve cabinets only; one silver medal, one bronze medal and diplomas to all over 21 per cent. Competitors of classes above this can not compete in this class, but can in all classes below.

Class E.—Landscape photography, twelve pictures, 7 inches or larger; one silver medal, one bronze medal, and one diploma.

Class F.—Landscape photography, with figures introduced; twelve pictures, 7 inches or larger; one silver medal, one bronze medal, and one diploma.

Class G.—Interiors; twelve pictures, 7 inches or larger; one silver medal, one bronze medal, and one diploma.

Class H.—Marine views; twelve pictures, 9 inches or larger; one silver medal, one bronze medal, and one diploma.

Class I.—Combination pictures, three combination prints; size to be left to the discretion of the photographer; framed, with or without glass; one gold, one silver, one bronze medal, and one diploma.

Class J.—Composition groups; this class to consist of single photographs or groups, grouped with back-work in; one gold, one silver, and one bronze medal.

Class K.—Commercial work, one silver medal, one bronze medal, and one diploma.

Class L.—Most tastefully arranged exhibit, one diploma.

Class M.—For best improvement in photographic appliances introduced since the last Convention, one diploma.

Class N.—Foreign exhibit, best collection of photographs, any size, framed or unframed, to be delivered to the Association free of all charges; one silver medal, and one diploma.

Competitors are allowed to compete in all three of the Special, Genre and Grand prizes.

Rules and Regulations.

- I. All prizes offered by manufacturers and the manner of awarding must be submitted to and accepted by the executive officers.
  - 2. All competitors must be members of the Association.
- 3. Exhibitors in Special, Genre and Grand prizes cannot compete in Class A, B and C. All photographs for Association prizes must be made from negatives taken since last Convention.
- 4. One dimension given applies to either length or breadth of pictures in all classes.
- 5. Should any exhibitor or exhibitors use his or their influence in any way directly or indirectly with the Judges, during their term of office, in favor of any exhibit or exhibits, it shall be the duty of the Judge to strike their exhibit or exhibits from the list. It is requested that all exhibits of pictures shall be framed in moulding not to exceed 2 inches in width.
- 6. Any manufacturer or manufacturers who desire to make an exhibit on his or their product in Art Department and not entered for Association competition, cannot occupy more than 6 lineal feet of space in said department for any one exhibit, and no exhibit will be accepted in the above department unless the exhibitors are members of the Association (this does not apply to foreign exhibitors).
- 7. Ten marks to be the highest given for any one point; consequently thirty points is the highest that can be given to any one picture. Cabinets and Paris panels to be judged as an exhibit, not as individual pictures.
- 8. All exhibits must be shipped to the Art Museum by August 1st, and all charges prepaid.
- 9. Applications for space must be made to C. M. Hayes, 246 Woodward Avenue, Detroit, Mich.

10. Entries for Art Department to close positively August 1st. No space will be allotted for exhibits after that day.

II. All Art Exhibits must be sent to R. P. Bellsmith, First Vice-President Photographers' Association of America, to the Art Museum, Detroit, Mich., and all charges prepaid.

12. Exhibits for Stock Department to be shipped to C. M. Hayes, Secretary Photographers' Association of America, Art Museum, Detroit, Mich., and placed in position by 9 A. M., August 6th.

13. Have your box covers screwed, instead of nailing; put your home address on the under side of cover for return of pictures. Put screw eyes and picture wire in box, and ship your exhibits early. All boxes and packages will be accepted at any time previous to the Convention, so that photographers need not feel any uncertainty about the safety of their goods.

Markings to be considered in all classes.

Special and Genre Classes .- 1st, illustrative; 2d, originality; 3d, photographic result

For Portrait Classes.—ist, posing; 2d, lighting; 3d, chemical effect. Class E.—ist, pictorial effect; 2d, chemical effect. Class F.—ist, pictorial effect; 2d, lighting; 3d, chemical effect.

Class G.—1st, technique; 2d, chemical effect.

Class H.—1st, pictorial effect; 2d, chemical effect.

Class H.—Ist, pictorial effect; 2d, chemical effect.

Class I.—Ist, originality; 2d, composition; 3d, general effect.

Class J.—Ist, originality; 2d, composition; 3d, general effect.

Class K.—Ist, chemical effect; 2d, general effect.

Class L.—Judges to be appointed by Executive Officers.

Appointment of Judges.—Twelve members (non-exhibitors) to be selected by the Executive Committee on the morning of the first day of the Convention; eight of the said twelve to be elected in open meeting by ballot. Three of the eight so elected to be selected by lot; the three elected to report for instructions to the Secretary immediately afterwards.

Each Judge to be compensated to the amount of \$25 for his service.

Duties of Judges.—Judges must examine and judge all Association Classes.

Duties of Judges.—Judges must examine and judge all Association Classes. Exhibits to be examined separately and individually. Judges to hand in a sealed report of their markings on or before the afternoon of the fourth day to a disinterested person to be accepted by the Association in open meeting and who will then compute the total.

Motion made and accepted that as some of the foreign exhibits came too late for exhibition last year were of such excellent merit that it was decided by the Committee that a diploma be awarded, and the same to be exhibited at Detroit, to the

following exhibitors:

Franz Herber, Duisburg, Germany. Charles Scolik, Vienna, Austria. L. W. Kurtz, Wiesbaden, Germany. Lutzel Bros., München, Germany. Louis Koch, Bremen, Germany. Fred Urbans, Kiel, Germany.

After a formal discussion as to the subject for illustration and numerous other matters pertaining to the Convention, the Committee adjourned, subject to the call -'YD-

of the President.

#### SOCIETIES.

LOWELL CAMERA CLUB.—At the annual meeting held March 11th, the following officers were elected: President, Paul Butler; vice-presidents, W. P. Atwood and F. T. Walsh; treasurer, M. A. Taylor; secretary, G. A. Nelson; librarian, A. H. San-It was voted to enlarge the Club library, which is kept at the rooms of A. H. Sanborn & Co., Central Block. A committee was appointed to take charge of an exhibition of amateur photographic work, to be held in the fall or winter. It is proposed to have this exhibition open to amateurs outside of the Club as well as to members. Prizes will be offered for excellence for work done during the present year. —∞;<u>અ</u>;∞

PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.—At the meeting on Wednesday, April 3d, Mr. Charles Goodyear, Jr., of New York, will give an exhibition of the J. B. Colt & Co. lamps, showing a comparison of the lime and electric lighting, together with other projection apparatus, including microscopic and polariscopic attachments.



### AMERICAN AND FOREIGN PHOTOGRAVURE.

LAST month I quoted from the *Photogram* this statement of the *Photographic Times* in reference to an exhibition of process work: "We cannot deny that the foreign work is superior to the American in many respects. It is softer and free from the coarse grain which appears to mar nearly all the work printed over here." After leading the world, as we have, in most branches of process work, such a statement as that, going the rounds of foreign journals, would do us much injury. My comments on it have attracted favorable attention, except from the editor of the Photographic Times, who writes too long a letter for publication, in which he calls attention to the fact that his severe criticism was only intended for our photogravure work, and that the Photogram editor failed to quote sufficient of the context to make his precise meaning plain. He also assures us of his belief that in other departments of process work ours is equal and in some cases superior to that of other countries. This being the case, I cheerfully withdraw the charge that he was libeling American process workers, and apologize to him for misunderstanding his true opinion of American process work.

But as to his stricture on American photogravure, I must say I cannot agree with him, and still hold the opinion that from a photographic standpoint our photogravure is superior, being freer from mechanical retouch than the foreign. And I am not alone in this view. Mr. G. W. H. Ritchie, the photogravure printer, who handles both American and foreign plates, says, that "in a comparison of grains the trouble with ours is the grain is too fine." Mr. Leopold T. Gubelman, of the Gubelman Photogravure Company, who has worked at photogravure on both sides of the Atlantic, says: "It is not just to say of our photogravure work that the grain is coarser than that made abroad. In book-work, which is the branch we have developed most, our photogravure plates are equal to any made abroad. If coarseness of grain should appear in a print it is due almost entirely to the printing. The foreign printer thinks two hundred impressions from a 5 x 7 plate a good day's work, while here from the same plate, in most cases, four hundred prints would be expected daily."

Mr. W. H. Gilbo, who has no superior in photogravure anywhere,

writes:

"It is as you say about the photogravure process; that made abroad

is no better than that made here, but the retouching is better and more carefully attended to, although, in a general way, German plates show the best results from process (eliminating retouching). As to "softness" and more or less "coarse grain," that is simply idiotic, because these faults (or qualities) are obtainable at will, by any process, in any degree desirable. Of course, I do not speak of my process, which is entirely different from any other, and gives perfect plates free from retouching.

Sincerely yours,

W. H. GILBO.

#### PROCESS POINTERS.

I suggested in the January number that artists designing for heliochromy use only the three colors afterwards used in printing. It is proposed to carry the idea still farther: that the artist's colors, the three color screens, and the three printing inks be all made by an international standard. This standard cannot be adopted any too soon. Mr. Kurtz gave me a couple of years ago samples of the three colors he used, with the remark that it had cost him \$7,000 to secure them.

Steel-facing a delicate half-tone engraving on copper will in a remarkable way permit a very large edition to be printed from it without perceptible wear. Some publishers have been approached by some one claiming a patent on this method, and offering to sell rights. The idea is a good one, and it is as free to use as air.

The British Lithographer quotes without credit to the BULLETIN our remark that "the omission of the words 'engraving' and 'etching' from the present American copyright law is a serious injury to the photo-engraver's business," and then adds, gleefully, "that is, of course, in the United States." Our present law gives them much of our business.

#### RELIEF BLOCKS MADE IN THE CAMERA.

The men who have led in perfecting the various photo-mechanical printing processes must have come to the conclusion that when the sensitive plate in the camera could be developed safely into a perfect printing block, then invention could go no further in that direction.

Seventy years ago Nicéphore Nièpce wrote to Daguerre: "I have perfected my process for engraving on metal." And Nièpce's method was to expose a metal plate, coated with a bitumen of Judea, in a camera for ten hours to the action of light reflected from an engraving. He succeeded in developing and etching such a plate, and printing from it in a copper-plate press.

Mr. Howard Farmer, principal of the London Polytechnic School of Photography, in a lecture entitled "A Photographic Wedding," suggested the making of printing plates in the camera in this way: Use an ordinary slow-working gelatine dry plate, expose and develop with ferrous oxalate, then immerse it in a solution of bichromate of potash. "Exactly the same effect is produced which is brought about by exposing the bichromate and gelatine to light—*i. e.*, the bichromate is decom-

posed—chromium oxide is set free, which instantly combines with the gelatine and renders it insoluble. The agent which reduces the bichromate in this new process is the reduced silver." Here we have a direct method which, with practice, would answer admirably for collotype work.

Still another direct process is suggested by Mr. W. H. Hyslop in the Inland Printer: "Take any of the slower brands of gelatine filmsthat is, those that are coated on celluloid—and expose behind the ruled screen as usual; the exposure will, of course, be much shorter than that given for wet collodion. Develop the plate with any of the pyrosoda formulas sent out by the plate-makers, and fix in the usual hyposulphite solution, wash thoroughly, and while doing so make up a very hot and saturated solution of chrome alum and have it in a deep tray. When the washing is complete, plunge the negative into the hot chrome alum solution and keep it there for five or ten minutes, when by that time it will have swelled where it has not been exposed to light and will remain sunken where it has been exposed. From this solution it is taken and washed, and then placed in a strong solution of chloride of aluminum for ten minutes, then it is washed again and dried over the stove, when it is ready either for electrotyping or mounting. In the former case mounting is not necessary. Supposing, however, that only a short run is required, an electrotype is unnecessary; for this reason, that the film of gelatine has become, under the operations, so hard that it is impossible almost to scratch it—in fact, an ordinary copper cut would be more easily scratched. It only remains, therefore, to take the film and cement it to the wood mount with celluloid cement, the same as is used with celluloid electros. And it will stand all the impressions that are wanted."

The problem of a direct process would be solved if this last method did not have the fatal objection that the printing lines obtained by it are round on top, instead of flat with square edges, as they should be. Still, it is a step, and we should like to see results from it.

#### THE FATHER OF HALF-TONE.

About a year ago the writer began to experiment in engraving half-tone on steel, intaglio, for plate printing, and in his researches found that Col. Baron Frederick von Egloffstein had explored the same territory thirty years before. But the colonel was dead, and his modus operandi had evidently been buried with him. Diligent search was made for any record of his work among the periodicals of that period without avail. The only living being who seemed to possess any information in the matter was our Mr. T. C. Roche, who had also a print from one of von Egloffstein's plates. All the facts obtainable at that time were published and were a surprise to half-tone workers the world over, for it proved that half-tone originated here, while the prevailing opinion up to that time was that it came from Germany.

In the January Bulletin, page, 25, was published the additional fact that "Mr. Sartain, of Philadelphia, ruled glass screens for Baron von



FROM NEGATIVES BY STROUT, BROCKTON, MASS.

PRESS OF FLEMING, SCHILLER & CARNRICK.

PHOTO-ENGRAVED BY CLARK & GEIGER.

MADE WITH THE ANTHONY ELECTRIC LIGHT APPARATUS.

LIBRARY OF THE UNIVERSITY OF ILLINOIS

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Egloffstein in 1861, with which the latter could experiment on his theory of half-tone." This statement is verified by Mr. Samuel Sartain in a very interesting letter, published in the March number of Wilson's Photographic Magazine. Under the title, "Some Half-Tone History," the editor reviews what had been previously recorded in brief as follows:

"In an interesting paper on the 'Father of Half-Tone' in the *Inland Printer* Mr. S. H. Horgan says that the first ruled glass screen used in half-tone photoengraving was made in New York in 1865, and was the invention of Col. Baron Frederick von Egloffstein. The screen consisted

of a highly polished plate glass, covered with a good asphaltum etching ground, heated and smoked over a wax taper in the manner of the engraver's black etching ground. When cooled, the plate was ruled over with a diamond or other point of a ruling ma-chine. The method of using this screen was to expose the sensitive plate to the action of the light through the screen, and then to the photographic image by a second exposure to light; both images were blended into one, the screen giving texture to the photographic image.

Anthony & Co., was in the employ of von Egloffstein. Hundreds of thousands of dollars were spent to make von Egloffstein's · engraving process a success, but it failed and was forgotten, the inventor having died

many years ago.
"It is a curious fact to know that these early screens were ruled with from five hundred to three hundred, which is much finer than the finest in use to-day. To the extreme fineness of the rulings the failure of the process was probably due.

"Mr. Horgan has recently perfected a method of photo-engraving on steel (intaglio, we think) for priets in polycible think.

we think) for prints in valuable historical works, where the paper used in ordinary half-tone would not last."

We have only space for a few extracts from Mr. Sartain's valuable contribution to half-tone history. He writes:

"I assisted Baron F. W. von Egloffstein in his experiments for accomplishing



heliographic engraving on steel, which he pursued in the summer of the year 1861, in BARON F. W. VON EGLOFFSTEIN. Philadelphia. His method consisted in photographing on a sensitive coating of asphaltum through the glass screen plate, ruled in one direction only, and also through the glass photographic copy of his subject; then dissolving out the unlighted portions and etching into the steel with acid to produce the intaglio printing surface.

"He experimented with the first screens that I produced, which were not quite satisfactory in the relation between the opaque and the clear portions; and in the meantime I continued in my trials until I succeeded in making a perfect, evenly ruled glass plate, with the proper proportion of clear and opaque lines, which he desired.

"Soon after my part of the work was accomplished, Baron Egloffstein's stock of benzole needed for a solvent was exhausted; he tried in vain in many directions to obtain more of the same quality which smelt the same, but finally gave up the effort, and was obliged to abandon his labors after he had demonstrated their success.

"After the war he resumed his heliographic studies, having obtained benzole with the right smell, and then perfected the process in New York, and took out his patent, which was issued November 21, 1865.

"Baron Egloffstein and I differed much in our opinions as to the proper number of lines to the inch for the screen plates. He wanted them made over two hundred and fifty lines to the inch, which I told him could not be well printed with the ink in common use. My arguments induced him to let me make the latest screens about two hundred and twenty lines to the inch."

Mr. Roche and Mr. Sartain have contributed their share to our knowledge of the invention of half-tone. We would be pleased if the others who assisted Baron von Egloffstein would relate all they know about it and complete the record.

#### A SUGGESTION FOR IMPROVING HALF-TONE.

To overcome the monotonous "screeny" appearance of half-tone blocks, to give them more character, and introduce something new, that if properly done will be popular with publishers, the following is suggested. The *rationale* of the idea is to imitate more in half-tone the methods developed by wood engravers.

It is well known that in engraving a portrait, for instance, the woodengraver uses one style, or formula, it might be termed, of lines to represent flesh, another to give the texture of drapery, and a third for backgrounds. The half-tone worker can do the same by making three negatives of a photographic portrait to be reproduced. Using, say one

hundred and thirty lines to the inch screen, make a negative as usual for the head. For the second negative use slit diaphragms, and turn the photograph so that only vertical lines will be had up and down the portrait. In making the third negative use slit diaphragms again, but have the lines at an angle, say of 45 degrees across the portrait.

Now print from the first negative as usual. Stop out on the metal plate all of the picture but the head, and etch this. Clean the plate, sensitize again, and print under the second negative with the vertical lines, taking care to register perfectly. Now stop out the portrait previously etched, and also the drapery, leaving only the background to be etched in vertical lines. When this is done, clean the plate once



MADE WITH ANTHONY'S ELECTRIC LIGHT.

more, sensitize it, and print under the negative with diagonal lines. Stop out the portrait and background, and etch the drapery when the portrait is finished.

On pulling a proof it will likely be found that lines of the three negatives overlap at their intersection; these can easily be corrected by an engraver. The writer is using this idea successfully in intaglio engraving, and there is no reason why it cannot be applied to relief

plates. Four registry points on the original will be found useful. This method is admirably adapted for landscape reproductions when the sky can be engraved in horizontal lines. Its applications are numerous. Let us see who will be the first to apply it, and we shall publish their results in the Bulletin.

Stephen H. Horgan.

#### HALF-TONE SCREEN VALUES.

IN a paper by W. K. Burton, read before the London and Provincial Association, detailing photo-mechanical progress in Japan, that gentleman, referring to the nature of the structural image of the half-tone negative obtained by the use of the screen grating, remarks: "I have never seen any explanation of this most remarkable fact, nor have I ever seen any attempt at an explanation that would hold water in it."

I believe this gentleman is in the habit of reading American, as well as European, literature; and should he possess a copy of *Wilson's Photographic Magazine* for April, 1894, he will find an article with a diagram therein, describing pretty fully the causes producing the effects that he has never seen any explanation of.

Whether said article "holds water" or not, I will make the following addendum: Four factors determine the structural nature of the half-tone negative. These are: Length of exposure; size and shape of diaphragm; distance of screen from plate; and make of lens used.

Regarding the first—exposure—I would point out that should Burton make some half-dozen exposures from the same subject, giving different time to each negative, he will obtain exactly similar results in his negatives as would be obtained in ordinary negatives. The over-exposed plates will have the middle or half-tone structural formation changed to high-light "values," and the high lights gone, "blazed out"; the shadows rotten and feeble. Such a structural image could not be attributed to "diffraction images of the diaphragm."

On the other hand, should the negative have been produced under circumstances considered normal, viz., round stop F/16, screen  $\frac{1}{16}$  inch from plate, the negative would show entirely different "values," meaning, of course, difference in the structure of the image. With stop F/54, conditions otherwise the same, the result would have been a fine copy of the screen. Could these effects also be accounted for by the "diffraction image of the diaphragm?"

With the negative five-eighths of an inch from the screen, and using a wide angle lens (short focus), there would have been no "structural image" whatever; an ordinary negative would have been the result. Could this also be claimed as a "diffraction image on the diaphragm?"

Circumstances being given as normal, the difference in the formation of the structural image is determined by the light intensities or tones of the picture to be produced. The high lights act upon the sensitive plate with preponderating force, and affect the atomic structure of the film to a much greater radius from each impinging point than those parts affected by the less luminous middle tones or light

intensities, the printing density of the differential light points being obtained, as every half-tone worker is aware, after judicious intensification has been resorted to.

Regarding the use of the different-shaped diaphragms and their effect upon the structure of the half-tone image, no doubt the nature of such stops was communicated to Mr. Ogawa by the American process vendor, who sold that gentleman the half-tone process, such stops having been in use in this country in connection with ordinary half-tone work for an indefinite period, and is considered nothing new to the inside operators.

Concluding, I would say that very little, or in fact nothing, of a serious or scientific nature, has so far been published in the manuals pertaining to this work. The field for treatment of such matters in the advancement of this work awaits the advent of an Abney, so far as Europe is concerned. We, ourselves, in a small way, seeing the possibilities for investigation, have of late turned our attention to the production of an optical instrument having qualities and characteristics for this work peculiarly its own. Specimens of color work produced by our instrument have been forwarded the editor of this journal some time ago. The line values in this work being obtained from crossline lined screen gratings, the same lens being capable of giving stipple or tint effect from the same screen. This lens is built by the optical firm of Bausch & Lomb, and is now being placed upon the markets of the world, free from patent or restriction, except in America. Projected and built to sell on its merits.

Macfarlane Anderson, Northport, Washington, U. S. A.

# DRY VERSUS WET PLATES.—IN PRODUCING NEGATIVES WITH THE LINE SCREEN FOR HALF-TONE ENGRAVING.

CINCE the advent of what is now called the half-tone engraving method, the making of the negative has, by the majority of operators, been accomplished by the wet collodion process, as the more rapid gelatino-bromide plate was not amenable to the treatment of clearing and intensifying used in the wet process. It is the purpose of this article to show and prove that by the use of a specially prepared process plate, made by the writer, equally as fine half-tone blocks are produced as by the wet-plate process, and have been used for a year or more past by firms who formerly used the wet plate method, but have laid it aside to the exclusive use of the new gelatine process plate. As the gelatine plate is always ready for use, and more sensitive than the bath plate, and the time taken up in developing, clearing and intensifving being about the same as the wet plate, much valuable time is saved, besides relieving the operator of preparing collodion, keeping silver baths in order, etc. The same plates are used in producing negatives of pen drawings, reproduction of wood engravings for transfer to stone, or producing deep-etched blocks. The following solutions are

required for developing, clearing, fixing, reducing and intensifying the process plates:

Developing Formula for Half-Tone (Screen) and Negatives of Pen Drawings.

Neutral oxalate of potash	. 0
Sulphate of iron No. 2.	1 Paper rott

Cul-1-4 . C .	
Sulphate of iron.	l nound
Sulphuric acid	Z pound.
Warm water	.15 drops.
Warm water	24 ounces.
No. 3.—Restrainer	
Determine 1	

No. 3.

To get an even developed plate, use sufficient developer to well cover the plate, allow to act until, on looking through, the image appears quite dense; then wash and place in clearing bath one or two minutes.

Alum	4.—CLEARING BATH.	
Citie acid	······································	1 ((
water		20 ounces.
Again wash and immerse		
Sulphite of soda	o. 5Fixing Bath.	
	·······································	2 ounces.
Duiphune aciu		ı drachm.
Hyposulphite of soda		2 drachms.

Water 2 drachms.

Hyposulphite of soda 1 pound.

Water 48 ounces.

Chrome alum 1 ounce.

Water 8 ounces.

Dissolve in the order given, add the solution of sulphuric acid to the sulphite of soda, add this to the hyposulphite, and finally add the solution of chrome alum.

No. 6.—Reducing Solution.

Ferricanide of notaging	
Ferricyanide of potassium	50 grains.
Water	Io ounces.
No. 7.—Bleaching Solution.	
No. I.	
Bichloride of mercury	240 orgine

Chloride of ammonium.  Distilled water	, 3
Distilled water	240
No. a	20 ounces.
Chloride of ammonium.  Water	
Water	240 grains.
77	20 ounces.

NT- 0 G	20 ounces.
No. 8.—CYANIDE SILVER SOLUTION.	
Cvanide of notassium C P	
Cyanide of potassium, C. P.  Distilled water.  Nitrate of silver	60 grains.
Nitrate of silver	o ounces.
Nitrate of silver.	bo grains.
Distilled water.	2 01111000
	2 ounces.

Pour the silver into the cyanide solution while stirring, and mark bottle "Poison."

Notes on using the foregoing solutions: Supposing that 6 ounces of developer is mixed, and a number of plates are developed, if bulk is reduced to 4 ounces, add 2 ounces of a fresh mixture and no bromide; also if what is left is placed in a bottle, on using it the next day, mix half of it and half of fresh mixed developer, and it will be found to

work more uniform than the developer freshly mixed, the old acting as a restrainer. Always use No. 4 solution after washing off the developer, as its function is to remove any trace of iron left in the film, and which, if not removed, will leave an opalescence in the clear spaces, also to harden the film and prevent its swelling up. After a stay of not less than two minutes in No. 4 solution, the negative is thoroughly rinsed and placed in No. 5 fixing bath, and when thoroughly cleared, remove. Do not proceed to wash out the hyposulphite as is ordinarily done, but simply pass the negative through water to remove the surplus hypo solution on surface, then examine with magnifying glass to determine whether any reducing or clearing is required, either as a whole or locally, which I consider is best done at this stage, as the hypo left in the film acts with the reducer-ferrievanide of potash—much better in clearing the transparent places than if a mixture of hypo and ferricyanide was used after all hypo had been washed out; the 5-grain solution of No. 6 can be used as a bath in a white porcelain dish, and the reducing effect watched closely, then removed, and its action immediately stopped by washing. If any part of the negative is found to require local reduction, the No. 6 solution can be applied to the part to be reduced with a tuft of absorbent cotton, or large round camel-hair brush, and then washed, to remove all hypo. If intensification is required, it is best done after the negative has been allowed to dry, but as time is of the utmost importance in this class of work, intensification can be done now, the only danger being of any hypo remaining in the film, which would cause a yellow stain after being intensified. To avoid this, place in No. 4 for one minute, then wash and place in the mercury solution until whitened, then wash again, and reduce the chlorized image to black either with a 10 per cent. solution of sulphite of soda or the cyanide of silver solution; the latter gives the clearest and most dense deposit; wash for a few minutes and dry spontaneously, or, if desired to dry quickly, it may be dried in warm air at a temperature of 90 to 100 degrees. Where electric light is used, if the negative is placed before a small electric fan, it will dry very rapidly, as the film of gelatine on these process plates is very compact, and does not swell up to any appreciable extent. I think I have now explained sufficiently the mode of using the process plate for producing half-tone negatives, from which blocks can be made that will furnish prints of the highest quality, and enable those who are tired of the vagaries of the old wet method, to realize that time, patience, and money is saved by adopting the new. For those who do not use a prism to reverse the image, Carbutt's stripping process plates can be used, and are treated just the same as plain plates; when dry they are laid on a leveling stand, on three points, brought to a level, and the plate covered with Carbutt's stripping medium, using 2 ounces for 8 x 10 plates,  $1\frac{1}{2}$  ounces for  $6\frac{1}{2} \times 8\frac{1}{2}$ ,  $\frac{3}{4}$  ounce for  $5 \times 7$ .

In a warm room it will dry in twelve hours, or over night.

The illustration in another part of the Bulletin is an example of commercial work produced as described from gelatine process plates.

IOHN CARBUTT.

# CHROMOTYPIC WORK IN STUDIO AND PRESS-ROOM.

TYPIC blocks for reproduction of colored subjects and scenes from Nature are daily and hourly receiving more attention at the hands of engravers, printers and those engaged in the different offices of illustrative work. Within the past few months there has appeared a plethora of colored cuts in the journals devoted to these arts, samples of work from firms bidding for public favor showing the usual amount of efficiency and deficiency, the natural outcome of a new science in more or less untrained hands.

Whatever litho and gelatine block printers may say or feel at this time regarding the adoption of this new system of typic color work, the fact remains that the merits and advantages of this new process are in every feature superior to anything heretofore introduced. As it is not my intention to discuss the relative merits or demerits of stone, type and gelatine printing methods, but simply to put before the workers actual facts in reference to the subject in hand, he will make his own deductions and draw his own conclusions from the matter placed before him.

In the first place, I would have attention drawn to the fact that much of this color work appearing of late, erroneously named "photochromotype," is only so in name, and must not be confounded with the photo-mechanical color process and what it is capable of doing. Further illustrating this remark, I will choose as a late example the August frontispiece of the *Inland Printer*. The colored view in this number is an example of the conglomerate style, and seems to have been executed by men who have for once overreached themselves, that is, so far as the negative and block making are concerned.

In place of the subtle shades and tints blending and diffusing themselves into each other, which would have been the case with the true photochromic process, we have a subject weak and flat in color rendering, quite devoid of atmosphere and effect, with not one virtue to recommend it to us in place of the chromo-litho work it is meant to displace.

An examination of this view will show that the yellow, red, and blue printings, which should have been the fundamental colors with which to build the picture, have been relegated to a secondary position, the principal effect being secured by printing over the blocked-out colors a half-tone cross-line printing in black. A fine object lesson in this class of color work was lately presented to the readers of the January, 1895, *Photogram*. This picture, also erroneously named "Photochromotype," has no more legitimate claim to the name than a house painter to the status of a royal academician. It is an excellent example, however, of "how color work should not be done," the block-color work in the chap books of our boyhood meeting all commercial demands in this line.

Much time, skill and work have been spent on the production of these blocks. It is this that impels me to state that had the originators of them worked as understandingly as they did perseveringly, then there had been quite a different consummation to their labors. Now as to some of these defects and their remedies, the diseases and their cures, in this new system of color work.

It has been advocated by the German school that in procuring absolutely correct color-value negatives, the dyes used to impregnate the individual colored plates must give as their complementary color the exact color of the pigments printed with, or, in other words, must have the same absorption bands. As perfect color-value work has never been produced by this manner of procedure, it is open to many objections. It is also worthy of note that the principal workers in the world to-day have set aside this theory as untenable, and proceed on their own individual experiments to obtain their results.

Whether one uses color-sensitive plates or not, the fact remains that proper color screens or filters must be used with the plates, to secure good results, as no sensitive plate has been produced as yet that is capable of producing the correct values without them. My method of proceeding is to make trial exposures on the make of plate I am going to employ for my work, in this instance photographing the pigments I have to use in the printing of the color pictures. It will be found in every instance that the screens giving satisfactory color values when tested in this manner will prove to be correct when used in the field. To those who might not care to take this trouble, I would recommend the use of color filters made by Carbutt, using such plates with them as fulfill the test as above stated, ortho or ordinary, as found best.

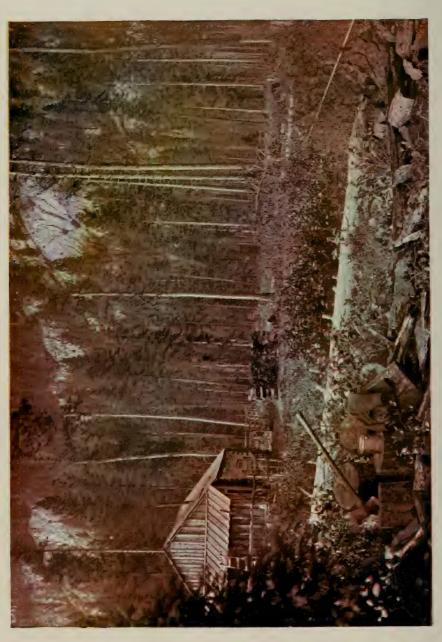
Next let me direct attention to the colored printing pigments used in this work. These must be of such a nature that when printed over each other, black is the result. Any inks used in this process that are incapable of producing their secondary colors on superimposition must be rejected. The tertiaries must likewise be obtained in similar manner, any shade of gray resulting from exact tonalities in all three negatives. Bearing this in mind, it will be seen that a worker with his brush is able to eliminate defects and secure certain qualities in his work by a judicious use of Chinese white on the transparency; still, as the slightest difference in any of the tonalities creates great changes in the resultant color picture, it will require much judgment and thought and should only be attempted by an artist or one who is capable of accurately weighing color values in his mind's eye.

In the third printing, blue, should the color work seem flat, weak and insipid, showing a decided want of effect, add a small piece of fine black half-tone ink to the blue; then try again. This simple experiment will prove to the Vogel clique the unsoundness of their doctrines.

Concluding, let me ask those lacking an art school training or artistic cultivation, to keep their eyes upon Nature, drawing lessons in color harmonies as they pass through life from her ever-varying face. If the laity have waited half a century for "pictures in colors," let the producers encompass work wherein pulses the breathing soul and all the eloquence of an individual touch. The chromo poster, brethren, belongs to the past century. In painting with Nature's brush, let there be seen the colors of Nature's face.

Macfarlane Anderson.

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AFAR IN THE FOREST.

# ANTHONY'S

# Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

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No. 5.

# TELE-PHOTO LENSES.

WE have many times called the attention of our readers to the wonderful qualities of the so-called tele-photo, or large-image, lenses, and as the season of out-door photography is fast approaching, a few further words on the properties of these instruments may perhaps be found useful. A few evenings ago we witnessed a lantern-slide exhibition, whereat the marvelous capacity of the tele-photo lens was admirably brought out. Mr. D. L. Elmendorf, with whose work on lantern slides our readers are probably familiar, took a tele-photo attachment with him on his trip through Switzerland last summer, and at the exhibition alluded to above fairly astonished his audience with his results. The tele-photographic lens will soon be recognized as being an essential adjunct. With it, for landscape work, the photographer need no longer employ a series of lenses of various foci, and the enormous advantage gained in photographing distant objects need hardly be enlarged upon. For obtaining detail in architectural subjects the lens has proved of very great value. In this connection our readers will probably recall the two half-tones published in a previous issue of the Bulletin, in which, with the tele-photo lens, an object was rendered clearly and perfectly, about 11 inches long, which, with the ordinary lens, was visible only as a dark speck. A much happier perspective is, of course, also obtained with these lenses, and this is a very important feature. Objects hitherto inaccessible to the photographer are photographed with ease and with accuracy. Again, within certain limits, the object may be photographed to any desired size. In itself the tele-photo lens is essentially merely a long-focus lens, and its behavior, as regards depth of focus and the like, differs in no way from that of ordinary long-focus There are, however, two important points of difference:

First.—The back focus of a tele-photo lens, when set to give a much greater equivalent focus, is much shorter than that of an ordinary lens of the same equivalent focus.

Second.—The equivalent focus of a tele-photo lens can be made to vary within wide limits by a comparatively slight adjustment of its parts.

The tele-photo lens consists essentially of a fixed positive focus lens system in front, with a fixed negative focus system behind, the distance between the two being adjustable, and the alteration of this distance giving a large range of equivalent focus, thus enabling the operator to obtain different-sized images of one and the same object at a given distance.

The degree of magnification depends on the type of tele-photo lens used. The compound tele-photo lens is composed of a portrait lens, to which is added a negative element of about one-fourth the focus of the portrait lens. This transposes it into a view lens of narrow angle, and gives the same effect, with moderate length of focus, as would be secured by an ordinary view lens of nearly three times the length of focus of the compound tele-photo. This negative element is called a "high-power" element.

Later Mr. Dallmeyer introduced a negative element of about onehalf the focus of the portrait lens. This he terms a "lower power" negative element for compound tele-photo lenses. These have larger apertures, and are for instantaneous work. They can be used with the

same portrait lens as the "higher power" element.

The portrait lenses used by Mr. Dallmeyer are his quick-acting lenses, series B, with diffusing arrangement on the rear combination. Those of our readers who have a new patent stereograph lens, a No. 1 B patent portrait, or a 2 B patent portrait, will only have to procure the negative element, either high or low power, as desired. In using the low-power lens for instantaneous work, it is evident that the field of sharpness must be limited, but results may be obtained that have hitherto been reckoned among the impossibles.

The moderate-power tele-photo lens consists of a rapid rectilinear lens and a moderate-power negative element of about one-half the focus. This is the lens that will probably be most used by our readers. The negative element may be purchased separately, and can be attached to any of Dallmeyer's rapid rectilinear lenses, or, if full details are sent, negative elements may be made to fit any rapid rectilinear lens. The rapid rectilinear lens is secured in the front end of the mounting containing the negative element, this latter projecting inside the camera. The illustrations that we reproduced in our issue of last November and the lantern slides that we allude to above were made by Professor Elmendorf, by the aid of a moderate-power tele-photo lens. The results are simply marvelous. The lens is quick acting, and a camera with the ordinary bellows will answer for general work.

Summarizing, we would say that the high-power compound telephoto lens is the most acceptable where great magnification is desired. It will be found to give most remarkable results, though for general work it is not as well adapted as the moderate-power lens. It gives

amplification of about five diameters, as compared with the image given by the positive lens alone, using, of course, the same amount of back extension, the amplification increasing, of course, with longer extensions of the camera. The lower power compound tele-photo lens is sufficiently rapid for all ordinary instantaneous work, and has the advantage of including a greater angle than the system just alluded to, the angle being about 17 to 22 degrees. The moderate-power tele-photo lens, that is, the one with the rapid rectilinear, gives results similar to the lower power tele-photo, but the angle included is rather smaller, being about 12 to 15 degrees, and the lens is not quite so rapid. Weight is saved by having the metal parts of the negative elements made of aluminium, instead of brass. We strongly recommend our readers to investigate the merits of these lenses, and would assure them that such investigation will prove profitable.

# CARBON PRINTING.—THE TISSUE.

In the April issue of "Autotype Notes," a monthly circular issued by the Autotype Company, of London, E. W. Foxlee gives several useful hints on the sensitizing of carbon tissue. In England the tissue is sold either sensitized or not, but in this country, as the sensitized tissue retains its virtue for only about two weeks, it can be obtained only in the insensitive condition. "In the insensitive condition the tissue will keep good for many years, provided it be stored in a dry place. Damp would, in time, give rise to mildew on the gelatinous surface, and thus spoil the material. It is not, however, advisable to keep it in an abnormally dry place, for then, after a time, there would be a liability of the pigmented gelatine becoming brittle, so that it could not be handled without risk of its cracking, unless great care be used. As to the colors of the tissue, there are a dozen, and more, to select from. But, as a matter of business policy, it is best that only a limited number be adopted in the general way-say three or four at most-and those of pronounced distinctive colors, rather than having several different tints of practically the same color. What these colors should be is quite a matter of taste. A black (engraving) sepia, red chalk, with a photographic color-brown or purple-will be found a useful selection for ordinary every-day work. Whatever tissues are employed, the conditions of sensitizing and drying them are the same; they do not, any of them, require a special treatment.

"The larger the proportion of bichromate the tissue contains, the more sensitive it will be, and the better it will be adapted for dense and hard negatives; and the less it holds, the better it is suited for negatives of the thin and delicate class. It is not necessary to have baths of different strengths in order to secure the advantage alluded to, inasmuch as one bath suffices, provided the time of immersion of the tissue is varied. A short or a long immersion is practically equivalent to using a weak or a strong solution. A suitable strength for the bath is 6 ounces of bichromate of potash to each gallon of water, supposing the

tissue is hung up to dry direct as it is taken from the solution. If, however, the superfluous solution is squeegeed off, then the strength should be greater—say  $\frac{1}{2}$  pound of the salt to the gallon. When the commercial bichromate is used, a little ammonia should be added to the solution, say a dram or so to each ounce of the salt used.

"It is not necessary in sensitizing large pieces of tissue that the tray containing the solution be as large as the tissue. If it is as long as the tissue is wide, it will suffice. In this case the tissue is rolled up, and then immersed in the solution; it is then unrolled, under the fluid of course, with one hand while it is rolled up again with the other—the unrolling and re-rolling being continued until the tissue is sufficiently sensitized. Sometimes, when this system is followed, a couple of stout glass tubes, or rods, are fastened on to the edge of the tray, a couple of inches apart, between which the tissue is drawn as it is taken from the bath. By this simple contrivance the superfluous solution is removed from the back and front of it at the same time.

"With some workers the tissue is simply removed from the bath and suspended to dry. With others the superfluous solution is closely removed by squeegeeing the tissue on a glass or metal plate, and sometimes it is allowed to remain on the plate until it has become dry. The advantages of that method of procedure were set forth at some length in the article on the new 'daylight tissue.' It will be well to mention here that temperature is a factor in sensitizing carbon tissue. The warmer the solution, the quicker will it be absorbed by the gelatinous coating, and vice versa. For this reason a really definite time of immersion cannot well be given-although it is generally done in manuals. A time that might be right in summer would not be so in winter, unless, indeed, the solution were always at an uniform temperature, a condition that is not easy to maintain in practice. However, the feel of the tissue while in the solution, after a very little practice, is sufficient to indicate when the desired condition, whether for weak or strong negatives, is arrived at.

"The sensitizing solution should be used colder in the summer than is necessary in the winter, because, as a curious fact, gelatine is more soluble in a solution of bichromate of potash than in plain water of corresponding temperature; consequently, when the tissue is taken from the bath, if that is warm, and is then hung up in a hot atmosphere, there is a tendency for the coating to partially dissolve. sentence, however, should have been written in the past tense, for with the improved tissues now supplied by the Autotype Company, it is not likely to occur, unless, indeed, in a quite tropical temperature. A good quantity of the solution should be poured into the dish for use, as, if the hands are much immersed while sensitizing, they raise the temperature of a small quantity more rapidly than they would a large one—a great disadvantage in hot weather. After the sensitizing is finished, the solution should be returned to the stock vessel for future use, for, as previously mentioned, it may be used, time after time, until it has become of a decided brown color. In summer, the vessel containing it should be kept in a cool place, and, if one is not available, a little broken-up ice put in the tray may be necessary to cool the solution, but this will seldom be required with the improved tissues. Should it be necessary, however, the solution must be made a little stronger in the first instance, so as to compensate for its dilution by the melted ice.

"The tissue should be stored away in an air-tight case as soon as it is dry, as exposure to the atmosphere hastens its insolubility, and very rapidly in damp weather. It should not be made too dry, that is, dried to a brittle state, as then it is very difficult to handle without its cracking, and also when it is in that condition it is not at its best for working. It will be slow in printing, and sometimes liable to wash away in the delicate high lights when developed. Its best working condition may, perhaps, be described as when the tissue is in that state that it can just be bent upon itself without its cracking, but if it were a little drier it would crack."



UR English friends are discussing the permanency of platinotype prints, and in the British Journal of Photography we find the following: "With regard to the yellowing of the whites of platinum prints, there cannot be a doubt that the majority of prints hitherto produced do exhibit that defect after the lapse of a few years, and it would be a very fortunate thing if we could be absolutely sure that a fourth bath of acid would prevent the mischief. But will it? Is it not probable that there is a slight trace of platinum in organic combination which is not eliminated, and whose presence only becomes visible after a time?" We are inclined to think that this may be partly the cause of the yellowing, and that, also, imperfect elimination of the iron salt may be a factor. For unless a fresh acid bath be frequently applied, there is always some trace of iron left in the paper which may or may not be removed by the subsequent washing. Again, we have observed that some photographers are not careful to use only pure acid for the removal of the iron. We adhere to our opinion expressed in the last issue of the Bulletin that a pure collodion paper, properly handled, yields as permanent a print as it is possible to obtain.

A CORRESPONDENT writes us as to a method of preparing ferric oxalate. In the journal above referred to, the following method, due to Herr Wissemberger, of Vienna, is described. Dissolve 96 grams of ammoniacal iron alum in 500 cubic centimeters of water at 30 to 40 de-

grees Cent. and precipitate the iron oxide with 84 grams of sodium carbonate dissolved in 300 cubic centimeters of water. The precipitate is washed by decantation in cold water until alkalinity disappears, then gradually add 49 grams of finely powdered oxalic acid. The solution, after filtration, should have a volume of a little less than 187 cubic centimeters. The finished solution should contain 20 per cent. of ferric oxalate and 1.2 per cent. of free oxalic acid, the normal ferric oxalate solution for platinotype.

The April issue of the *St. Louis and Canadian Photographer* contains an exquisite print on Aristo-Platino paper, the work of F. Hammer, of St. Louis. We note that on account of "poor health," W. H. H. Clark has retired from the editorial staff. In the meantime the journal gains in health and increases in popularity.

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The gridiron saturator, for details of which see our advertising columns, is meeting with much success. It is extremely easy to manipulate, is free from all odor and danger, and yields a light of great brilliancy. It is readily adapted to any form of optical lantern.

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WE welcome the *South African Photographer*, a new quarterly published by B. G. Lennon & Company, of Cape Town, South Africa.

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To the photographer who delights in the filling of albums we would strongly recommend the squeegee albums for sale by our publishers. By the use of these books the mounting of prints is dispensed with, the photographs being slipped into place as in an ordinary portrait album. Prints can thus be changed about as desired.

Our friends send us many excellent photographs, some of which we reproduce. We tender our thanks for these kind attentions.

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From the editors of the *Photogram* we have received a circular letter which shows that our British brethren are feeling the general depression in business. The *Photogram*, always to the front in efforts to assist the photographer, is working up a great deal of interest in photo-ceramics and among other proposed schemes will open a photoceramic department at the Imperial Institute Photographic Exhibition and at the Eastbourne Exhibition. Our fraternity would do well to seriously consider the question of reviving the ceramic enamels. There is no doubt about their beauty and their permanency.

C. M. Hayes, the Secretary of the Photographic Association of America, in a short chat the other day gave us some idea of the many good things that will be served at the Convention in August. Not the least interesting will be the permanent art exhibit at Detroit.

Among the many interesting things will probably be the Anthony electric-light apparatus, and those photographers who were not at St. Louis will have an opportunity of seeing this excellent substitute for daylight. The half-tone illustration here reproduced is the fourth exposure made by La Roche, of Seattle. Mr. La Roche writes enthusiastically of the light. Mr. Brown will probably be recognized by his many friends.



MADE WITH THE ANTHONY ELECTRIC LIGHT.

Many interesting novelties will be found in our advertising columns, and we would advise our readers to look them over carefully. When ordering from advertisers, kindly mention our publication.

All communications for the June issue of the Bulletin must reach us on or before May 22d.



#### THE INFLUENCE OF TEMPERATURES DURING EXPOSURE.

SINCE my last communication the chief photographic event in London has been the Camera Club Conference, which, after a duration of several days, came to a close on Monday, April 8th. A most instructive paper among those read was one by Captain Abney, relating to the influence of temperatures during exposure. He said that he would not speak of those abnormal temperatures at which he is carrying on experiments with Professor Dewar, but would leave the latter to publish them when desirable; he would, however, speak of temperatures which may come within the practical experience of photographers in outdoor work in different parts of the world. It was no new subject to him, for he took up the question about the beginning of 1884, and published the results in the Bulletin of the Belgian Photographic Association; he thought, therefore, that he had better summarize the old results, and add those of the last few months.

When a phosphorescent plate is warmed by a flat iron, an image of the iron is shown by higher luminosity at the place where the higher temperature was applied, probably because the molecules take up an increased amplitude of vibration. When a warm flat iron is pressed against the back of a gelatino-bromide plate, and the plate then examined by reflected daylight, it will be seen that the color of the plate is altered, becoming deeper orange, and that on cooling it resumes its normal color. Place an iodide plate in intense cold, such as that produced by carbonic acid, snow and ether, and the iodide will be found to have acquired a gray color. Such changes mean something, and that "something" ought to show itself when exposing these sensitive compounds. If a gelatine plate warmed at the back by an iron be exposed to light while hot, on development increased density is yielded at the part which had been heated; and if the light be very feeble, such as that of a match, the parts outside the iron are very nearly unacted upon by the developer; this is the case whether the plate be developed immediately or allowed first to cool. If the plate be heated, then cooled, then exposed to light, no action is visible. A hot iron was pressed against the back of a wet collodion emulsion plate, and, after exposure and development, the heated part seemed to be less sensitive; but when one-half of a plate was placed in boiling water, that half behaved like the heated part of the coated gelatine plate; it was merely a matter of

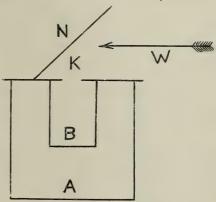


PORTRAIT STUDY BY HEARN. (Negative on Climax Plate.)

LIBRARY OF THE UNIVERSITY OF ILLINOIS moisture. In trying a sensitometer on a heated plate, he found a marked increase of sensitiveness,

Within the past few months he had resumed this line of experiments. By trials with a Becquerel's phosphoroscope, he had found that there is no phosphorescence in a gelatine plate. He had also constructed a piece of apparatus, the more essential portions of which are represented in the accompanying cut, in which the box A is filled with a freezing mixture of ice and salt, and at the bottom of the inner box B the sensitive plate is laid face uppermost. K is a hole which may or may not be closed with glass, quartz, or other material, and N is both a lid and a mirror, which reflects light from the direction W, down upon the sensitive plate when the exposures have to be made. With this arrangement he could get temperatures down to minus 0.18 degree Cent. and minus 0.33 degree Cent., temperatures which may also be

encountered in some places abroad. Sometimes, instead of a freezing mixture, he would put a hot brick inside the box, to get a rise of temperature. The exposures varied from 5 to 320 seconds. He found that with a slow lantern plate there was a difference in speed of between 160 at zero and 320 at the heat of a hot summer's day. With one of the most rapid dry plates in the market, he found that the diference in speed at minus 16 degrees



Cent. and +33 degrees Cent. was not so marked as with the lantern plate, and with certain films the difference was still less. With the old collodio-bromide plates there was a marvelous difference; between minus 17 degrees Cent. and +32 degrees Cent. the difference in sensitiveness was 4.5 times; fall of temperature vastly lowered the sensitiveness of the plate, and probably shrinking of the film had something to do with the result. He found that between the temperatures of +33 degrees Cent. and +38 degrees Cent. some change usually takes place in a gelatine plate; the curve of sensitiveness there loses its general character, probably in consequence of the escape of hygroscopic moisture. From these experiments he drew the conclusion that photographers should take another factor into consideration in their work, namely, the temperature of the plate at the time of exposure. The full paper, with diagrams, will be published in *The Camera Club Fournal* about the time that these lines reach you.

In reply to various questions, Captain Abney said that the only effect of heating a plate several times over instead of once is the production of fog. There may be some rational foundation for the old idea of giving a longer exposure when the wind is in the east, chiefly, perhaps, because of variations in hygroscopic moisture; absolute dryness of the film diminishes sensitiveness over the useful times of practical exposure. There is always a certain amount of hygroscopic

moisture in a gelatine plate, and, if this be removed, the plate is destroyed. What occurs at ordinary temperatures is a difficult question to answer; he had worked in the Alps at from minus 5 degrees Cent. to plus 100 degrees Cent.; one thing is certain, that with differences of temperature there is a large difference in the sensitiveness of different kinds of plates.

Mr. William England stated that in the daguerreotype days it was known that heat had some action on the plates. He kept iron plates at a temperature of 90 degrees Fahr. or 100 degrees Fahr., and put them in the dark slide at the back of the sensitive plate; they did increase the sensitiveness. One precaution had to be taken, namely, not to make them too hot, or they would make the halogens evaporate from the front surface of the plate.

### THE CAMERA CLUB CONFERENCE.

THE other papers read at the Conference, in addition to the one just dealt with, included one by Mr. Rowland Briant on "Photography and Decoration." In the course of the paper he remarked that he was not aware of photography having been applied to wood-carving, but it can be made to produce silhouettes, and a great deal of wood-carving is now done by machinery from an original model, which the machines will enlarge or reduce at will. Mr. H. E. Armstrong, President of the Chemical Society, read a paper entitled, "Considerations Suggestive of Experiments attending Exposure and Development"; it was a paper of but a few lines, for the purpose of starting discussion. The Rev. F. C. Lambert read a brilliant paper on "Criticism." He had taken the trouble to hunt up the origin of the saying that "Critics are men who have failed," and found it in the late Benjamin Disraeli's novel of "Lothair." Dr. Hall Edwards read a paper which had involved plenty of experimental work "On the Correct Rendering of Color Values by Photography," and gave results with most of the orthochromatic plates in the market. Three or four speakers agreed with him that what are wanted in experiments of this kind are photographs of pigments and not of the spectrum, for photographers do not find spectra hanging on trees. Mr. H. Dennis Taylor read a paper on "Telescopic Star Images in Relation to Vision and Photography," and Mr. A. Pringle the following:

#### A NOTE ON INSTANTANEOUS PHOTOGRAPHY.

Mr. Pringle, in his paper before the Camera Club Conference, stated that some blood corpuscles are inhabited by foreign organisms which go through life in twenty-four hours, and it is desirable to be able to watch these changes, and to photograph them at any desired moment. This has been done before now, but he ventured to think that he had reduced the thing to great simplicity. Like Dr. Van Heurck, he used a vertical attachment to the microscope, and shooting horizontally across the top of it, in a box, he had a long shutter; this shutter was at first furnished with a mirror silvered on the front face to reflect

the image to the eye, but this mirror tarnished; then he tried a prism, but for his purpose it had to be too large and heavy; then he tried a mirror of optically worked glass silvered on the back, and this answered all right, perhaps because the angle was rather narrow. There were other mechanical improvements. He took a microorganism with a heart beating five times a second, which it wore in its transparent back, and Mr. Pringle photographed this as well as other living micro-organisms; he obtained a sharp representation of the heart and no double images.

# COMPRESSED GAS CYLINDERS.

A sad accident which happened in London has led to the examination of an exploded gas bottle by Dr. A. Dupré on behalf of the Government. He is a Fellow of the Royal Society, also a noted expert in this country on explosives. As he was kind enough to lend me his official report yesterday, and as it contains plenty of instructive information about compressed-gas cylinders, I append a considerable portion thereof. In the first place, however, it will be as well to give a brief outline of the circumstances.

A gardener named William Holbrook had been sent by Dr. Kennedy, of Plaistow, to Messrs. Newton's, of Fleet street, London, to bring home a small cylinder of oxygen, weighing about 16 pounds. At Fenchurch Street Station, in the afternoon, when the down platform was nearly deserted, he sat down, lit his pipe, and the bottle exploded, apparently between his side and left arm. One of his legs was found on the rails, a hand near where he had been sitting, and his body under some barrows, a few yards away from his seat. The bottle simply ripped open. It had been made by Messrs. Stewart & Clydesdale, of Glasgow; filled by Mr. Clarkson, of Holborn, London, and handed to the deceased by Messrs. Newton. These are all respectable, old-established and careful firms. The bottle was a new one, only used a few times, and when sent back by Dr. Kennedy for refilling, as it had a little gas in it, it was used by an apprentice of Messrs. Newton for lime-light experiments, then sent on to Mr. Clarkson for filling.

Mr. Clarkson uses chlorate of potash oxygen, and not that made by Boussingault's baryta process. Dr. Dupré came to the conclusion, after examination, that the quality of the oxygen had nothing to do with the explosion. He then, in his report, describes the method of compressing the oxygen, and the machinery and appliances on the premises for compressing nitrous oxide, oxygen and coal gas. He then goes on to say:

"This gas (coal gas) is also compressed in two stages: first, by two air pumps used only for this purpose, which force it into an upright receiver, similar to the oxygen receiver, but painted red. From this receiver it is pressed into the cylinders in the same way as in the case of oxygen. The hydraulic pump is used for pumping the water into both the oxygen and the coal-gas receivers; the water is, however, never used twice, but each time the receivers are filled with oxygen or coal gas respectively, the water they contained is allowed to run away and fresh water is taken, so that no coal gas can be taken into the oxygen cylinder, or vice versa, by means of the water used. As, however, the hydraulic pump is connected with both

sets of receivers, the possibility of coal gas entering the oxygen cylinder is not

absolutely excluded.

"In order to make the same hydraulic pump serve for the purpose of filling all the cylinders (oxygen and the coal gas) with water, a tube (hydraulic tube) runs from the pump horizontally along the front of the receivers about half way up their height, and from this tube branch pipes run down to the bottom of the cylinders. By means of valves on this tube the water can be shut off from or allowed to enter any one of the cylinders at will. When the valves are closed and the hydraulic tubes are full of water there is no connection between the oxygen and coal-gas cylinders through which air could pass from one cylinder into the other. But when the hydraulic pump is not working, and the two valves on the hydraulic tubes leading respectively to the coal-gas and to the oxygen cylinders are open, a communication may be established between the two cylinders through these hydraulic tubes, by means of which gas may flow from one into the other.

"All the cylinders now used by Mr. Newton which are to contain oxygen are painted black, and their connections have a right-handed screw, while all cylinders for coal gas are painted red and have a left-handed screw. These cylinders cannot therefore be mistaken one for the other. At the same time I was informed by Mr. Mr. Spurge that they still occasionally fill cylinders for some of their customers both with coal gas and with oxygen, which are not so painted and fitted. When Mr. Clarkson receives a cylinder to be refilled it is not emptied, neither is the gas it may contain tested. The amount of gas left in is, however, measured by a pressure gauge, and a customer credited for the amount. Should, therefore, a cylinder supposed to be an oxygen cylinder contain coal gas, it would be filled with oxygen, and might, depending on the amount of coal gas left in, contain an explosive mixture.

#### TESTING THE CYLINDERS.

"All the cylinders supplied by Mr. Clarkson are tested at his place by hydraulic pressure up to 200 or 230 atmospheres, under which pressure they are left for about two minutes. No steps are, however, taken to ascertain if the cylinder tested has or has not been strained by the test applied beyond the elastic limit of the material of which it is made, and the value of the test is thereby greatly reduced.

#### THE CYLINDER,

"This was what is known as a lap-welded cylinder of about 33 inches internal diameter, and a thickness of a little over three-sixteenths. This thickness will be amply sufficient to withstand safely a pressure of 125 atmospheres. With a steel of a tenacity of 30 tons to the square inch it would, in fact, burst only at a pressure of about 427 atmospheres. The steel, however, was not of a quality best suited for such cylinders; it was too hard and not sufficiently ductile, owing, probably, to its not having been effectively annealed. There were also running along the entire length of the cylinder shallow streaks, which, when the metal is bent, have a tendency to open into cracks, and had probably somewhat weakened the metal. Chemically, however, it was of high quality. The inner surface was fairly clean, but at the end at which the valve was the surface was encrusted with magnetic oxide of iron which was easily removable, and which under the microscope showed in many places the globular form assumed by magnetic oxide produced by the burning of iron. lower part of the brass screw, by means of which the valve fittings are screwed into the bottle, was also encrusted with magnetic oxide of iron, much of which was in the form of small globules, produced by fusion at a very high temperature. They were evidently fused to the material of the screw, and had in some cases even slightly fitted the metal. The magnetic oxide attached to the bottle still contained a trace of greasy or fatty material. The brass fittings had been broken off, obviously by a blow against their upper end. The part of the screw free from screw threads which passed through the stuffing-box was slightly greased. This grease had undoubtedly come from the stuffing-box. The screw portion on the inner side of the stuffing-box was quite free from grease. The valve itself was also entirely free. The small hole through which the oxygen escaped contained, however, a minute amount of grease similar to that on the upper part of the valve screw. Here there was also a leather washer which had probably at one time been greased, to render it more tight.

"The bottle had been ripped open by a force acting from the interior with considerable violence.

"Previous to giving way, the bottle had obviously been expanded or bulged, the rent running at first longitudinally along the cylinder, at each end of which there were two rents running across on each side, and extending to about two-thirds round the circumference of the cylinder, thus producing two flaps which were bent outwards and nearly flat. No portion of the metal was missing. Along the first fracture the thickness of the metal had been reduced in parts to two-sixteenths, showing a considerable stretching of the metal had taken place before rupture.

"After thoroughly weighing all circumstances of the case as they present themselves, I have reluctantly come to the following conclusion: Firstly, that the bottle at the time of the accident contained an explosive gaseous mixture; and secondly, that this mixture was fired by some portions of finely divided iron or perhaps grease igniting the compressed gas. That some iron had actually been on fire in the cylinder, the condition of the screw sufficiently proves.

"I cannot conclude without expressing my best thanks to Mr. Clarkson, more especially to his manager, Mr. Spurge, for giving me every facility to inspect their works, and for the very open and complete manner in which the latter answered all my questions.

#### PARTICULARS OF THE STEEL.

Piece cut lengthways from the bottle.
Elastic limit, 25.15 tons per square inch.
Breaking strain, 30.16 tons per square inch.
Extension on a 3-inch piece, 13.2 per cent.
Piece cut transversely to the length of the cylinder.
Elastic limit, 34.11 tons per square inch.
Breaking strain, 35.19 tons per square inch.
Extension on a 1½-inch piece, 18 per cent.

#### Analysis.

Iron99	.128
Carbon o	.107
Manganese o	.432
Sulphur o	.058
Silicon	

Such is the major portion of the report of this rigid examination of a burst gas cylinder. Dr. Dupré, at the inquest, deposed that Mr. Clarkson employed competent men and proper machinery; also that the contingency of which he had spoken in the report was very remote. The grease, he said, might have been knocked out of the wash-leather by the force of the explosion.

The jury returned a verdict of "accidental death," with recommendations appended. Mr. Spurge tells me that Dr. Dupré misunderstood one thing he said to him, namely, that they had a few outstanding bottles with their screws unaltered, but they never filled gas into a wrongly painted bottle. W. H. Harrison.

"The best way to preserve the lens from injury is to have a little bag, made of soft wash leather, padded with cotton wool, in which to keep it. An extra cap, fitting over the rear combination, is also advisable."

### MAXIMS FOR BEGINNERS.

Is it difficult to make photographs? No, it is not. But unless you have patience and love the art-science, you had better let photography alone. If, however, you possess these desirable attributes you may, with the aid of good apparatus, become a second Eickemeyer or Stieglitz, names of which American amateurs have reason to be proud.

In order to become proficient, you will have to alternate between study and experiment, and a well-selected photographic library, including a subscription to this and a foreign journal of photography, will do much to advance you in the art-science.

Photography is like all other sciences, whether connected with art or not; the more we study it, the more we ascertain that we still have much to learn. Every photographer, whether amateur or professional, must continue to study or be left behind in these days of progress.

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A PERUSAL of works on composition, lighting, perspective, and other works treating of art, especially in its relation to photography, will also be of advantage to you, as it will enable you to look at things with an artistic eye that you have hitherto passed by unobserved, and to appreciate beauty where you have perceived none before.

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As regards a camera, I should advise you to purchase as good a one as you can afford, and one that can be used both on a tripod and as a hand camera. Avoid the purchase of a magazine camera, as you would a lethal poison, for it is too heavy to be carried about conveniently, encourages a waste of plates, and is not unfrequently productive of slip-shod habits. Leave the magazine camera to the "press the button and we'll do the rest" idiots and do not increase their number.

No one is worthy of the name of a photographer who does not do every part of the work himself. A busy man may sometimes delegate part of the work to somebody else, but unless he understands that work as well as the person to whom it is transferred, he does not belong to Daguerre's followers.

The purchase of a good camera is also advisable on the score of economy, although this may sound contradictory. I had four cameras before I acquired my present outfit, and whereas my first apparatus cost but \$5, the value of my present outfit must be expressed in three figures. As I had to sell the four cameras referred to at a loss, it is not difficult to see that I would have gained financially by purchasing my present outfit in the beginning. Hence it is prudent to spend as much money as one can afford for a first-class camera.

The size of a camera is a matter of great importance. One that will take a picture of 5 x 7 or, better yet, 5 x 8 inches, is preferable to a

smaller size, as it will permit of the insertion of kits, by means of which photographs from  $3\frac{1}{4}$  x  $4\frac{1}{4}$  to 5 x 8 inches may be made. Four by 5 inches is the popular size just now, especially for hand cameras.

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The selection of a suitable lens, too, is a question of much moment. If possible, the amateur should equip himself with three lenses, a rapid rectilinear for landscapes, a wide angle for interiors and architecture, and a portrait lens. Combination lenses have recently been placed upon the market, but as I have had no experience with them, I care to say nothing about them. Aw ide-angle lens may be converted into a landscape or long-focus lens by unscrewing one of the lenses of which it is composed, but no lens can take the place of the portrait lens. I know that it is futile to endeavor to prevent the beginner in photography from taking portraits with a landscape lens, for that is precisely the first thing he will attempt to do. As he goes along, he will learn that there is a limit to everything, and that some things cannot be done under any circumstances.

Good care should be taken of lenses. When not in use they should be protected from dust and put away in lined cases or little bags of chamois skin. In cleaning, the greatest care should be taken not to scratch them, and only fine, soft linen or chamois skin used for the purpose.

Stops or diaphragms give the photographic image sharpness; the smaller the stop is, the sharper becomes the image. Nowadays, indistinct photographs are the fashion and large stops are preferred.

A SHUTTER, provided with a pneumatic release, is also indispensable, for it enables a photographer to expose a plate without jarring the camera.

Unless the amateur is traveling, he will find glass plates preferable to films. As he advances in the study of photography, he will learn to use orthochromatic plates in order to obtain color values, non-halation plates, to prevent fogging in interiors, and the numerous other plates that are used for special purposes. One of the best plates for beginners is undoubtedly the Carbutt "B," as it allows great latitude in exposure.

Exposure is a subject on which little can be said, as it necessarily varies greatly with the lighting and other circumstances. Experience soon teaches the tyro how to expose correctly.

A good lantern is essential to good development. The best is the cheapest in the end, as it will prevent the ruination of many plates. The pocket lanterns that are generally supplied with cheap outfits might as well be consigned to the refuse heap, as far as their usefulness is concerned.

Maintain order in the darkroom. Have a place for everything, and everything in its place. Practice the most scrupulous cleanliness, and carefully clean every utensil after use.

Construct a darkroom in your summer kitchen or shed, and provide it with a ruby or orange glass window, before which a bracket or shelf is made to hold a large kerosene lamp. In this way you can dispense with a lantern and economize space. The darkroom should be provided with lock and key and kept securely closed during the owner's absence, so that no person can gain access to the poisons it contains. There are many amateurs in this country who have to do without the luxury of a darkroom, and who are compelled by circumstances to do their developing in bathrooms or by the kitchen sink. To them one of the portable darkrooms or tents in vogue in Great Britain would be a godsend.

Beginners should abstain from varnishing their negatives. It is quite a knack to varnish properly, and many a fine negative has been irretrievably ruined by improper varnishing.

FORTUNATELY, unmounted prints are all the rage just now. The beginner, therefore, is not obliged to make his life miserable by making ineffectual attempts to mount his photographs.

In conclusion, one word more. Whatever you try to do, do well. If you are in a hurry, postpone photographing or develop some other time. Nothing is so fatal to photographic art as unnecessary haste.

Dr. Hugo Erichsen.

# CONSCIENCE IN PHOTOGRAPHY.

ARTISTIC photographs are becoming the rule, and not the exception, as they were ten years ago. We are taking rapid strides forward in posing, lighting, fine chemical effects and retouching. Printing and toning do not fall behind. Operators, retouchers, printers, we are advancing in art. We are doing our best along these lines, and rejoice in the improvement we are making. But let us not forget that the value of a picture depends upon more than its artistic merits. Photographs may be beautiful and still be worthless. On a corner shelf in our sitting room, at home, where the sunshine never reaches, stands a "Mintha" portrait of a friend. It was finished about two months ago, in the studio of a prominent photographer in one of the large towns of this State. When received it was an attractive picture, but its beauty has departed. We are watching it curiously, to note whether it will fade to blank paper, or a few dingy traces be left to remind us of our friend.

Not long since a gentleman said to me: "My friend had a dozen cabinets from Blank's, and they faded out just like proofs; he paid

\$8 for them, too," Blank shows the finest photographs, and has the most elegant gallery to be found in a city of about three hundred thousand inhabitants in the Empire State. What was the reason the pictures faded? We all know. The prints were not thoroughly fixed and washed. In making a dozen photographs, what one part of the work requires most painstaking? Mr. Blank, Mr. "Mintha" maker, tell me. A hard question, isn't it? Well, what part of the work can best be slighted? Ah, now you are ready. Your pictures answer for you. They say: "Fixing and washing are a great deal of trouble. doesn't matter so much. The pictures are all right to deliver." So answer two of our number, leading men in leading towns. A host of smaller men, in smaller towns, say the same thing, to their shame, one and all. Fading cannot be charged to the paper, nor to the mounts. Prints that are thoroughly washed and fixed will not fade. It takes time and trouble. It is the drudgery of photography. But let us not shirk the drudgery. Everywhere it is the most important work in the world. All the rest depends upon it. Our patrons must trust to our honor for lasting pictures. Let us bring honor to the front. Let us not sell shoddy for good wearing material.

ADA A. THOMPSON.

# A LETTER FROM THE EXECUTIVE COMMITTEE OF THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

WE, the Executive Committee of the Photographers' Association of America, hereby submit a plan of reorganization of the National Association, to be submitted and acted upon by its members at the Detroit convention.

We recommend the reconstruction of the "Constitution and By-Laws" as indicated by a copy printed herewith, as being the most commendable for future success of the States and national associations.

The existence of the various State associations makes it necessary to change the laws and government of the national. Our purpose is not to jeopardize the interests and welfare of the States, but to aid them, and to maintain and stimulate a still higher standard of photography in the future.

The past history of the National Association and its yearly conventions have proven to be of great benefit to our profession, and has undoubtedly done more good to photography than any other known means. We therefore trust that each reader of this magazine will give the proposed plan a careful perusal, and thus become thoroughly familiar with its objects.

We believe that the proposed triennial meetings with this form of government will uphold our profession to better advantage than the present system. We also believe that it will stimulate the State associations to unite and meet in one grand congress of photographers every three years.

The amalgamation will undoubtedly prove a lasting benefit to each individual State, and infuse more life and vigor in their organizations. It will allow them a broader scope to advance, and would be a great incentive to improve to much better advantage than their present system of continued meetings within their States.

It would of course be necessary that the States hold no local conventions the year of the Triennial Congress. We do not, however, assume any right to interfere with the laws of the State associations, but we hope they will give us their support and co-operation.

We have endeavored to place the basis of revenue sufficiently low enough to interest the States and the fraternity in general.

Any part of the new laws and Constitution can be altered, omitted or amended

at the pleasure of the members of the National Association at the Detroit convention. We merely, as your Executive Committee, submit the plans for your consideration.

In concluding this letter, we desire to extend our most heartfelt thanks to the photographic press for the publication of this and other matter pertaining to the welfare of the Photographers' Association of America. Especially do we extend our thanks and gratitude for the support and aid granted us by its editors in maintaining the interest of the Association and their united support in all matters of the past.

Believe us to be most heartily and fraternally yours,

John S. Schneider, R. P. Bellsmith, George Steckel, J. Ed. Rosch, C. M. Hayes, Executive Committee.

# MANUAL OF THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

#### PREAMBLE.

Whereas, the object of this Association is the advancement of the art of photography and the elevation of the professional character of its members, the establishment of a higher and more perfect system of conducting the business of photography, the promotion of friendly intercourse and feeling, and the unity of purpose in pursuing the direction that points to its greatest success as an art, therefore we, the members of the Convention now assembled in Detroit, Mich., August, 1895, composed of photographers from various sections of the United States, do now adopt the following Constitution and By-Laws.

#### CONSTITUTION.

#### ARTICLE I.

This Association shall be called the Photographers' Association of America. Its aim shall be to encourage the various State organizations, and to promote a friendly intercourse of feeling among such State organizations and to further unite and encourage the photographers of the United States and Canada, in the following objects:

*First.*—To establish the relations between members of the profession and the people at large, upon just and business principles, which shall promote public welfare, and be of mutual advantage.

Second.—To improve the science and art of photography by diffusing scientific knowledge among its members, fostering photographic literature, stimulating discovery and invention, and encouraging the production and manufacture of all articles required for photographic use.

Third.—To discourage and oppose any unjust opposition which tends to hamper the progress of the art.

#### ARTICLE II.

#### STRUCTURE OF THE ASSOCIATION.

Section 1.—The Association shall be constituted as follows:

Paragraph 1.—Such State associations as shall become members of the National Association.

Paragraph 2.—Such individual members of States and territories where no State or territorial organization exists.

Paragraph 3.—Such photographers, inventors and scientific men who may be deemed worthy of distinction to membership.

SEC. 2.—No change shall be made in the structure of the Association as hitherto established, save by amendment to this Constitution.

#### ARTICLE III.

#### MEMBERSHIP.

Section 1.—The membership of this Association shall consist of regular and associate members.

Paragraph I.—Regular members shall be such members of State organizations who are photographers in good standing, or such photographers who reside in a State or territory where no State or territorial organization exists.

Paragraph 2.—Associate members shall consist of manufacturers of photographic materials, dealers in same, and their representatives and employees.

Paragraph 3.—All present and past Presidents of State Associations who become members shall be considered *ex-officio* members of the legislative body of this Association.

#### ARTICLE IV.

#### Powers.

Section 1.—Legislative powers shall be vested in the National Association, which shall be composed as follows:

Paragraph 1.—The officers as provided in this Constitution.

Paragraph 2.—The national representatives legally elected, appointed or selected.

Sec. 2.—The officers of the National Association shall be as follows: President, First Vice-President, Second Vice-President, Secretary, and Treasurer, who shall be elected triennially, as provided by law, and shall hold office for the term of three years, or until their successors are duly elected and installed.

Sec. 3.—National representatives shall be elected by the State associations in the same manner as State officers are elected.

 $S_{\rm EC.}$  4.—The term of a national representative shall be three years next succeeding his election or appointment.

Sec. 5.—Resignation of membership shall be made in writing to the Secretary or Treasurer. All resignations shall be acknowledged in writing by the officer who receives them, and shall be reported to the next regular meeting of the Association.

SEC. 6.—Eminent men in the United States and other countries—inventors, photographers and other scientific men who may be thought worthy of the distinction—may be elected honorary members. They shall not, however, be required to contribute to the funds, nor shall they be eligible to hold office or vote at a meeting.

#### ARTICLE V.

#### OFFICERS AND THEIR DUTIES.

Section 1.—The duties of the President shall be such as usually devolve upon the presiding officer of a deliberative or parliamentary body.

Sec. 2.—In the event of the temporary absence or inability of the President, the First Vice-President shall succeed to the duties of the President. Should the First Vice-President be absent, the Second Vice-President shall discharge the duties of the President.

Sec. 3.—The duties of the First Vice-President shall be to take charge of the art exhibits at conventions and perform such duties as will insure the prosperity and welfare of the Association.

Sec. 4.—The Second Vice-President shall have charge of the instructive sessions at conventions, and shall be considered chairman of all committees appointed for such purposes.

Sec. 5.—The Secretary shall keep fair and correct minutes of the proceedings of the meetings, and carefully preserve on file all reports, essays and papers received by the Association, and shall be charged with the necessary foreign and scientific correspondence. He shall receive 5 per cent. of the gross receipts as full compensation for his services. Any moneys collected by the Secretary shall be immediately turned over to the Treasurer, taking his receipt for the same. He shall make an accurate and detailed report of the business of his office in time to be audited at the annual meeting of the Executive Committee.

Sec. 6.—The Treasurer shall collect and take charge of the funds of the Association. He shall pay no moneys except by order of the President and Secretary. He shall present a statement of his accounts at each annual meeting of the Executive Committee. The Treasurer shall receive 5 per cent. of the gross receipts, as full compensation for his services.

In case of absence of the Treasurer, he shall appoint a deputy with power of Attorney to fulfil his duties. The Treasurer shall be required to give an indemnity bond that shall be deemed sufficient and satisfactory to the members of the Executive Committee, and said bond shall remain in the custody of the President of the Association.

#### ARTICLE VI.

BOARD OF TRUSTEES AND STANDING COMMITTEES.

Section i.—The Board of Trustees shall consist of the President and the two Vice-Presidents.

Sec. 2.—The Executive Committee shall consist of five officers as heretofore enumerated, and they shall have charge of the general affairs of the Association.

Sec. 3.—A Committee on the Progress of Photography, consisting of three members, shall be appointed by the President at each convention who shall make a report in writing at the next regular Convention.

Sec. 4.—A Committee on Credentials consisting of the President, Treasurer and Secretary, shall exist, whose duty it shall be to pass upon all questions involving the right of membership and representation.

#### ARTICLE VII.

Section i.—The revenue of the National Association shall be derived from State association tax, membership dues, voluntary donations and the sale of space at conventions.

#### ARTICLE VIII.

The meetings of this Association shall be held triennially as hereafter provided.

#### ARTICLE IX.

#### AMENDMENTS.

The Constitution may be altered or amended by a vote of three-fourths of the members present at any regular meeting, and notice to alter or amend the same shall be given at least one sitting before a vote can be taken thereon.

# BY-LAWS.

#### ARTICLE I.

Section—1. The triennial meetings shall be held at such time and place as may be determined by the Executive Committee.

Sec. 2.—Special meetings of the Executive Committee may be called by the President whenever deemed expedient.

#### ARTICLE II.

#### QUORUM.

Twenty-five representatives, including the Executive Committee, shall constitute a quorum for the transaction of the business of the Association.

#### ARTICLE III.

# MEMBERSHIP (QUALIFICATIONS).

Section I.—Each State organization which becomes a member of this Association shall be entitled to one representative to every fifty members of such State organization.

Representatives shall be entitled to their railroad fares to and from the triennial meetings.

Sec. 2.—In States and territories where no local organization exists, two representatives shall be selected by the Executive Committee in such States or territories to represent their State or territory in the National Association.

Sec. 3.—Application for membership shall be made in writing to the Treasurer, who will forward same to the remaining Committee on Credentials for approval.

Sec. 4.—No photographer residing in a State or territory where a local organization exists can become a member of this Association except through the medium of such State or territorial organization.

#### ARTICLE IV.

#### DUES.

Section 1.—Each State Association shall be required to pay 25 cents per capita tax annually into the treasury of this Association.

Sec. 2.—Individual members (regular and associate) shall be required to pay an initiation fee of \$2, and \$1 dues, on application to the Treasurer. Dues of individual members shall be payable annually.

SEC. 3.—The tax or dues of members shall be payable during the month of May of each year. In the event of failure to pay the required tax or dues at such time, or within thirty days thereafter, such member shall forfeit the right to membership, and can only be reinstated by the consent of the Executive Committee after a thorough investigation has been made.

#### ARTICLE V.

#### ELECTIONS.

Section 1.—All elections shall be held at the morning session of the second day of the Convention, shall be by written ballot, and shall require a majority of all the votes cast to elect. If upon the second ballot no one receives such majority, the one receiving the lowest number of votes shall be dropped from the list, and so at each succeeding ballot until an election is had.

Sec. 2.—Candidates for office shall be regularly nominated by the members in open meeting previous to election, and no ballot cast for one not so nominated shall be counted.

 $S_{\text{EC. 3.}}\textsc{--All}$  persons elected officers shall signify their acceptance or notify the Secretary within one month of their election.

Sec. 4.—The officers of the Executive Committee shall be entitled to their expenses attending meetings and conventions, the same to be paid by draft on the treasury.

#### ARTICLE VI.

#### VACANCIES.

Section i.—In the event of temporary absence or a permanent vacancy of any office, or in standing committees, except in the office of President, the vacancy shall be ordered filled by the President.

Sec. 2.—In the event of vacancy in the office of President, the First Vice-President shall discharge the duties of that office until the next regular election; and if for any reason he be unable to fill the position, the Second Vice-President shall succeed.

#### ARTICLE VII.

#### MISCELLANEOUS.

Section 1.—Except as otherwise provided, a majority of all the valid votes cast shall be deemed sufficient to determine any question.

Sec. 2.—The Committee on Credentials shall report all new members and any matter pertaining to their office at the regular triennial meeting of the Association.

Sec. 3.—No member shall be deprived of membership or privileges of such, except through the medium of charges made by another member at regular convention, nor until two-thirds of the members present shall vote to suspend or expel said member.

Sec. 4.—Any motion duly made and seconded shall be recognized by the President, and shall then only be debatable.

Sec. 5.—Any motion made and seconded, after being duly recognized by the President, shall be open for discussion, and, while it is before the Association, no other motion shall be received, unless to amend, divide, commit, to lay on the table, postpone or adjourn said motion.

#### ARTICLE VIII.

#### ORDER OF BUSINESS.

Section 1, Paragraph 1.—Calling Convention to order.

Paragraph 2.—Calling roll of officers.

Paragraph 3.—Reading minutes last Convention.

Paragraph 4.—Report of Committee on Credentials.

Paragraph 5.—Reports of officers and their reference.

Paragraph 6.—Report of standing and special committees.

Paragraph 7.—Miscellaneous papers and communications.

Sec. 2.—This order of business may be transposed at the pleasure of the President or by a majority vote of the Convention.

#### ARTICLE IX.

#### AMENDMENT'S.

This Association may from time to time enact such by-laws, rules and regulations as may be deemed proper for its good government, provided such by-laws, rules and regulations shall be consistent with the provisions of the Constitution.

All meetings of the Association to be governed by "Cushing's Manual."



The question of copyright is one in which all photographers should take a deep interest. At an informal meeting of representative photographers, held in New York, on March 14th, it was decided to issue a prospectus submitting a plan to the fraternity. The committee who have the matter in charge is composed of Napoleon Sarony, B. J. Falk, James L. Breese, Geo. G. Rockwood and Charles E. Bolles. The proposition is that an organization, to be known as the Photographers' Copyright League of America, be formed at once, and take upon itself, by means of an Advisory Committee to be elected annually, the prosecution of all infringers of the copyright works of any of its members, whenever a proper case for such prosecution is presented. The league will defray all expenses, receiving in return, so as to make it self-supporting, a fair percentage of all recoveries so obtained. In addition a moderate annual assessment, just sufficient to cover running expenses, will be levied. Address 13 and 15 West 24th Street, New York.

A PARTY will start for a photo-cycle tour through Europe, leaving New York on August 13th. Cost about \$280. For full particulars our readers are referred to Mr. J. H. Lamson, Temple street, Portland, Me.

# ELLA WHEELER WILCOX AND HER POEM "MAURINE."

Editor Anthony's BULLETIN:

Gentlemen,—I see it announced by the managers of the coming Photographic Convention that their principal prize is for illustrations of the beautiful story of "Maurine" by the charming poet, Mrs. Ella Wheeler Wilcox.

As she is one of my dearest friends, I recently had an interview with her concerning this announcement. She was delighted by the honor paid her, and at my request wrote the following concerning this story.

I think all will be interested in Mrs. Wilcox's own version of this beautiful poem.

George G. Rockwood.

"Maurine" is one of my earliest efforts, and the only poem of any length I ever attempted. I had written a good deal of miscellaneous

verse which had attracted local attention in the West, and I felt a strong desire to achieve something great. I had never been seriously in love at that early age, and I was a good deal of a favorite with—girls, so the idea suggested itself to me to have the plot of my poem hinge upon the sacrifice of a lover on the altar of friendship. Of course, if I had ever loved a man, I could not have written the poem.

I began it in May, I recollect, over twenty years ago—and finished it in October.

I believed it was to make me rich and famous, but it only got me in debt. Its sale was limited until after the publication of "Poems of Passion," when "Maurine" began to come into notice. It received some very good crit-



ELLA WHEELER WILCOX. From Copyrighted Photo by Rockwood.

icisms, however, but not from critics who had influence—(if a critic ever has, which I doubt). The critic of the *Mail and Express* said "it contained 400 pages of stale, flat, lifeless verse." He said he felt—" mingled pity—and envy for the author." "Pity—that the book was so poor, and envy for the state of mind which could find pleasure in such trash."

I know I cried all night over that notice. But for the last ten years the book's sale has steadily increased. I received the largest royalties

from it this year I ever got. The name was one I invented. I had never seen or heard it, and have every reason to believe it is my own invention. Six children to my knowledge have been named after it, one in this city during the last year.

I receive many beautiful letters from people about the book, and all this is very pleasant to me when I recall the bitter early disappointment I suffered over its failure and the unkind and unjust criticisms like the one quoted above. Of course, it is right for a critic to say what he believes to be true, but it seems strange that a critic of any judgment and fairness should utterly condemn a book as worthless when it contains qualities which cause it to live twenty years and grow in general favor.

I feel a very tender sentiment toward this book; all my early hopes, and dreams, and aspirations, are entwined about it. It was the first consecutive work I had ever done, too.

I don't know when anything has pleased me so much as this compliment which the Photographic Association has paid my "Maurine."

(Signed) ELLA WHEELER WILCOX.

# LANTERN SLIDES—HOW TO MAKE AND COLOR THEM.\*

-6-6.-

BY DWIGHT LATHROP ELMENDORF.

(Continued.)

#### CHAPTER III.

DISEASES AND REMEDIES.

SOMETIMES the slide is beautiful, except for a slight haze or fog, caused often by over-exposure and sometimes by too warm a developer. This may be removed without injuring the slide by a careful and slow application of the following medicine: Dissolve 24 grains of hyposulphite of soda in 1 ounce of water. To this add from three to ten drops of a saturated solution of red prussiate of potash. This should be added, drop by drop, just before it is to be used, because the mixture does not keep longer than fifteen or twenty minutes, and should never be used except when freshly mixed. This mixture forms a clearing and reducing solution, the active power of which depends entirely upon the amount of potash added. The best results are obtained when it is so weak that two or three applications are necessary before any effect is seen.

After slides have been once dried, they do not respond with any degree of comfort to this treatment. It is best to apply it just after the plate has been removed from the hypo and rinsed off once or twice. Running water should be convenient, so that the action may be checked at any moment. Experiments upon worthless plates should precede any attempts on a good slide.

To apply this remedy a 1-inch camel's-hair brush should be dipped into the mixture and then brushed quickly, but gently, over the wet

<sup>\*</sup>Commenced in the January issue. Copyrighted, 1894, by E. & H. T. Anthony & Co.

slide in every direction, while in a horizontal position; after which, the slide should be held under the tap for a moment, and then examined. It is well to have the brush full of the mixture before applying; otherwise, streaks may appear. If not cleared enough, repeat the operation. By using a little judgment one part of the slide may be reduced more than another at pleasure.

Remember that the action will continue for a short time after the slide is placed under the tap. After treatment, the slide should be washed for a few minutes, and then placed in the alum solution, and then washed thoroughly.

2. Sometimes a *slight veil* or *fog* is caused by the water used either in the making up of the developer or for washing the plates. Croton water is very liable to produce this effect. Remedy—dissolve  $\frac{1}{2}$  an ounce of citrate of soda in 6 ounces of water, and pour this solution on



THE LANTERNIST'S DARKROOM.

and off the plate. Sometimes it is necessary to rub the plate with a tuft of absorbent cotton wetted with the solution.

3. A sky full of *opaque* and *transparent spots*. The opaque spots are sometimes in the emulsion itself; they are then incurable, but generally they are caused by minute transparent places in the negative, called "pinholes." Chemical dust, mentioned before, is another source of this evil.

Transparent spots are often caused by poor manipulations in the development, little bubbles of air on the plate preventing the developer from acting on those portions of the slide.

They may be prevented by rocking the tray violently when the plates are first immersed. Sometimes it is necessary to rub the plate with the ball of a finger, which is wet with developer, but only the

gentlest pressure must be used or the film will be scratched. A perfectly clean camel's-hair brush may be used, if it is very soft, but the delicate touch of the finger is better.

It is sometimes possible to clear up such a sky, without injuring the rest of the slide, by careful applications of the red potash mixture; but the author prefers to block out the sky of the negative with Strauss marl and make another exposure.

4. The slide is very thin.

There are several causes of this disease; under and over exposure bring it on, and under-development aggravates it. Correct exposure, but not long enough development, will also result in thinness.

Remedy-make a new slide.

Having tried all the patent medicines labeled "superb formulas" for the intensification of slides, and failing in every case to make the consumptive slide equal in any respect to a new one exposed and developed correctly, the author recommends the above remedy as a safe and sure one.

Intensifiers are like procrastination.

5. The slide is too thick and dark. This is the result of over-development. Take a small tray, fill it with cold water to a depth of one-fourth of an inch, and add to the water ten or twenty drops of the red potash solution and mix it well. Place the thick slide, as it comes from the hypo, without rinsing it at all, in this tray, removing it every few moments for examination. If no action takes place, remove the plate, add more potash solution, mix well, and then immerse the plate again. If properly adjusted this prescription will reduce the thickness of the whole plate to any desired extent. After treatment, wash under the tap for two or three minutes, place it in the alum solution for the usual time, and then proceed with the final washing.

6. Curious *stains* on one or more corners of the plate, caused invariably by some substance foreign to the developer which had not been re-

moved from the fingers which held the plate.

Hypo, alum and red prussiate of potash take fiendish delight in producing these beauty spots; so beware of their pranks.

Remedy—none. Prevention is the best policy.

7. Yellow tinge to the whole plate, often caused by impure water, sometimes by old and decomposed developer or hypo solution. It may be remedied, but not always, by an application of the red potash solution as in the first case.

An application of the citrate of soda will sometimes relieve it.

Weak hydrochloric acid will clear the plate, but is liable to take film and all with it.

This yellow tinge is sometimes inherent in the emulsion itself, and is hopelessly incurable. Get other plates.

8. Frilling. This peculiar disease is often caused by exposing the gelatine film to sudden changes of temperature. If a plate be removed from a developer which is 70 degrees and plunged into water or hypo at 45 degrees temperature, the changes are that the edges of the plate will frill. The gelatine expands and contracts more rapidly than glass,



WEST GATE, NÜRNBERG.

D. L. Elmendorf.



SIMPLON ROAD, ITALY.

D. L. Elmendorf.

LIBRARY OF THE UNIVERSITY OF ILLINOIS and therefore wrenches itself from its support, and seems to swell up in places to such a degree that it loses its power of contracting again to its original size. The alum solution will sometimes stop this, but will not remedy it. Lantern-slide plates, are not so liable to frill as the more rapid negative plates, but it will happen on any plate which was not properly cleaned before the emulsion was applied.

There are many other diseases which are the results of careless manipulations, dirty fingers or apparatus and unpardonable thoughtless-

ness, which may never trouble a careful worker.

Only a short diagnosis of the evils, common to all, has been attempted.

Once again, allow sad experience to reassert that time, temper and money are saved by making another exposure if the first was defective in any respect.

Poor slides often make excellent cover glasses, if they are free from bubbles and are well cleaned.

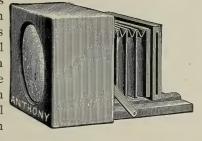
#### CHAPTER IV.

#### TESTING SLIDES.

Slides which appear to be very good while wet should be carefully examined when dry. Generally they gain in density as they dry, especially if they are dried rapidly.

A very nice little instrument for testing slides is called a lanternoscope (see cut), which consists of a frame holding a convex lens, fast-

ened to a folding bed on which slides another frame made to hold a lantern slide. This is connected with the lens frame by a bellows which excludes all light except that which passes through the slide. Upon looking through the lens at a slide inserted in place, an enlarged image is seen, and the general quality of the slide may be judged with great ease and pleasure.



When one does not wish to go to the trouble of lighting up the lantern, this little lanternoscope affords a convenient means of showing slides to friends or to pupils in a class-room.

The best test, however, is the lantern itself, when under the conditions that the pictures are to be afterwards exhibited.

Slides which are just right for a lantern with oil light are not so for the oxyhydrogen jet. Again, those which are suitable for the latter are not the finest for the electric arc light.

Still further discrimination must be made when the size of the screen is considered. A slide which appears well upon a 6-foot screen will be disappointing on a 20-foot screen, appearing too dark because it is too thick. If another slide, but not so thick, from the same negative, be then projected upon the screen, the difference will be apparent; whereas, if the same pair of slides were judged upon the small screen, the former would be pronounced superior.

(To be continued.)

# OUR ILLUSTRATION.

OUR readers will note that we have not this month presented them, in accordance with our usual custom, with an actual photograph. To our considerable surprise, we received from the United States Post Office a communication reading:

"In accordance with instructions from the Post-Office Department, I have to inform you that it has been decided that photographs and other matter pasted to printed paper sheets, otherwise eligible to admission to the mails as second-class matter, subject them to a higher (third-class) rate of postage, for the reason that the law prescribes that second-class publications must be formed of printed paper sheets, and shall contain no writing, print or sign thereon or therein in addition to the original print, except as provided by Section 308, Postal Regulations (which relates only to certain permissible writing and printing on second-class publications and their wrappers). If it has been your practice heretofore to affix photographs or other matter to your publication, mailed at second-class rate, please discontinue it in future."

We regret exceedingly that the Post Office takes this stand, especially as for some thirty years publications containing photographs have gone as second-class matter unchallenged. Our regret, however, is tinged with a certain amount of satisfaction in that we are able to present our readers this month with a print by Macfarlane Anderson's phusochrom process. Mr. Anderson, with whose writings our readers are somewhat familiar, is located at Northport, Wash., and the prints forming the frontispiece were printed by his collaborator, Mr. A. C. Austin, of Albany. In another part of the Bulletin will be found Mr. Anderson's remarks concerning the print. It marks a step forward in color printing, and will, we think, be viewed with special interest, as it is a reproduction from Nature.

Professional photographers will do well to study the proposed new constitution for the Photographers' Association of America. Great credit is due to the Executive Committee for their wisdom in recognizing the necessity for a change, and for the care and ability displayed in the drawing up of the constitution. Every photographer should make an earnest endeavor to so regulate his engagements that he may take part in the deliberations at Detroit in August next.

-'YD--

Make a note of it: Photographers' Association of America Convention, Detroit, August 6th to 9th.

As a varnish for celluloid films, the following is recommended in *Phot. Notizen:* 

 Powdered amber.
 5 parts.

 Chloroform.
 45 "

 Coal-tar benzine.
 45 "

 Gum dammar
 7½ "

The mixture should be allowed to stand in a warm place for some time and decanted twice before using.



# ARTISTIC ETCHING OF HALF-TONE PLATES.

In this department of "process work" have been described all the steps in advanced half-tone work, from negative-making to the etched plate. The formulas for the enamel solution, instructions for the flowing and whirling of the plates, drying and "burning in" have been given. We will now consider the artistic final etching of the plate in which is shown the skill of the operator and which determines the quality of the work turned out by an establishment. The making of half-tone plates is one thing, like the performing of any branch of photographic work, but to produce artistic results is quite another. If the etcher has not a fine appreciation of the values of light, shade and modeling in the copy, then for him these remarks might "better be left unsaid" like those of some of Du Maurier's society people.

So important is this final etching that the establishments who furnish the half-tone engravings to the leading magazines employ for this work only men with keen artistic judgment of light and shade values. By preference men who have been practical wood engravers are best adapted for the work. It is but fair also, as half-tone is largely taking the place of wood engraving, that wood engravers should be employed at the new method that is forcing them from the occupation

which took them so many years to perfect themselves in.

This is not a plea for wood engravers, but a suggestion to photoengraving houses who aim to do first-class work, and the only work that will be accepted in the near future, to employ wood engravers when possible. Their training will be as valuable to the firm that secures them as was art training to all successful photographers from Daguerre to Sarony.

Now as to procedure. We will suppose that a suitable half-tone negative has been made, a good print developed on a copper plate and burned in to a rich brown. After the back and edges of the copper plate containing the print are coated with a protecting varnish, it is then put in a bath of chloride of iron solution of the proportion of say I of iron to IO of water. The tray containing the etching bath should be rocked, and the etching solution poured off occasionally into a graduate or vessel of some kind to be poured again over the plate and by the force of the liquid falling on the plate clean out the dots exposed to the action of the acid. This pouring of the etching solution on and off the plate will be found an excellent way to secure deep etching.

When the plate is etched sufficiently deep for printing purposes, it is washed thoroughly and dried slowly. When dry it can be inked up and a careful proof pulled on the hand press. This proof is then compared with the original, when it will be found that the proof is flat, the lights are not light enough. Here the judgment of the trained engraver or artist is valuable. Draw with a pencil on the proof lines around the portions that require to be lightened, and study out carefully where the highest lights are. Now for the artistic etching.

Put in a saucer 2 ounces of a thick gum arabic solution and stir in ½ ounce of chloride of iron. When the ink is cleaned from the plate with alcohol, spit on the plate and spread the saliva until the whole surface is covered. This may seem vulgar and ridiculous, but the best steel and copper plate engravers in the world do it. It is one of the tricks of their trade. It prevents any etching solution painted on the plate with a brush from spreading. Now lay the copper plate on a level table with the marked proof and original as a guide, and with a camel's-hair brush paint on the very lightest lights the thickened chloride of iron solution. Keep adding iron solution with the brush to that first put on the plate, spreading the solution gradually toward the shadows. Have plenty of blotting paper handy, and when it is thought the dots in the highest lights have been etched fine enough blot off the chloride of iron. If the dots in the highest lights are not almost needle points then brush on more iron solution and blot it off. If the edges are to be vignetted, begin by painting on the iron on the extreme edge, and by causing it to encroach further and further on the cut, soft vignetted edges can be obtained.

Contrasts most valuable are obtained in a half-tone etched in this way, but care must be taken that the etching solution is kept spreading or it will leave lines showing where its edge rested. Better blot off the solution several times, repeat the painting on of the iron solution than attempt to do it in one operation.

# LOCAL INTENSIFICATION AND REDUCTION OF NEGATIVES.

In half-tone negative-making a most important requisite for the operator is to know how to widen the transparent dots in the high lights and strengthen the weak opaque dots in the shadows. It is an expedient that should not be resorted to unless absolute necessity requires it, and yet all the most successful half-tone operators get their very best negatives by local treatment, as is here described.

It was a hint I got in June, 1874, in Anthony's Photographic Bulletin, that gave the principle of the method. It was then recommended to use an aqueous solution of iodine thickened with gum arabic. Paint this solution with a camel's-hair brush on the parts of the negative requiring reduction. The gum kept the solution of iodine from spreading. After washing the negative, a weak solution of cyanide of potassium is flowed on and off the negative, until the required reduction of intensity is obtained, which will only be had where the iodine solution was painted on the negative.

Painting the iodine solution on in the manner recommended gave, I

found, hard lines at the edges of the spots covered with the iodine. That is, there would be no blending of intensity between the reduced portion and the rest of the negative.

To overcome this, I flowed a plain gum arabic solution over the negative, after redeveloping it or intensifying it. Then when the gum was dried so it would no longer flow, the iodine solution was painted on it locally with a camel's hair brush. When the gum was washed off and the whole negative treated with a weak cyanide solution, it was found there were no hard lines of demarcation between the portions of the negative stained with iodine and those which were not.

If it is desired to intensify instead of reduce portions of the negative, it is only necessary to paint those parts with iodine, wash off the gum, and flow the whole negative with I part of hydrosulphuret of ammonium in 6 parts of water. Whether the negative is treated for local reduction of intensity, increase of intensity, or both, it should, after the iodine treatment and the washing off of the gum, be flowed with hydrosulphuret of ammonia, as given.

If this first treatment is not satisfactory, the operation can be repeated as often as necessary.

#### A SIMPLE COPYING COLLODION.

THERE are formulas upon formulas for collodion, but for simplicity, reliability and general adaptability, this one will be found equal to any for line work:

Ether and alcohol, equal parts.			
Anthony's Snowy cotton	6 grains	to I	ounce.
Brown iodide of ammonium	4 ''	4.6	4.4
Bromide of cadmium	i grain	6.6	6.6

#### VON EGLOFFSTEIN'S HALF-TONE PROCESS.

THE reproduction herewith is from a proof of a half-tone plate, made by Baron von Egloffstein in 1865; it is the property of Mr. T.



C. Roche, who was assisting the Baron at the time. It was considered one of the most valuable exhibits at last winter's photo-mechanical exposition, held in New York.

Mr. S. R. Koehler, the curator of prints for the Smithsonian Institution, said of it that it was a print that would be highly prized by that national museum. He desires that if photographers who devise any new process will only send a print to him with

the date of their discovery he will see that it is recorded in the archives

at Washington and credit given to them through all ages for their work. There is no record there of von Egloffstein's work, and, consequently, others have been patenting his invention and reaping the honor of his researches.

# PHOTO-MECHANICAL WORK IN JAPAN.

WE have received from R. Konishi 18, 2 and 3, Nichome, Honcho, Tokyo, Nippon, a copy of the Shiyashin Ceppoh, or monthly report of photographic progress. The frontispiece (or back-piece, their front



being the back of the journal) is an admirable collotype print that would do credit to any printer anywhere.

We reproduce here a portion of the cover of the magazine.

STEPHEN H. HORGAN.

# "AFAR IN THE FOREST."

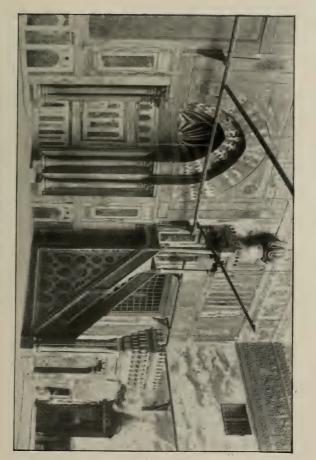
THE scene, "Afar in the Forest," is a specimen of the phusochrom method employed in the production of colored objects or scenes from Nature, as in this instance. A few facts regarding the creation of this picture may be of some interest to the readers of the BULLETIN.

The scene itself was chosen as an excellent example of Nature's work, wherein were contained an abundance of colors belonging to the tertiary and lesser orders. The artistic and pictorial rendering of these was undeniably a severe test of the methods employed in its production.

The principal features of consideration and that call for some attention I will here enumerate:

- (1) The scene is from Nature, not a copy.
- (2) Color values obtained on ordinary plates.
- (3) Single line screen values obtained from a cross-line screen.
- (4) It is printed from four blocks.

Regarding the first, photographing from Nature, there were the difficulties of reflected light to be overcome in a certain degree, along with the difficulty of rendering color values having the atmospheric qualities or color effects when viewed at distinctive distances or pictorial planes.



MOSQUE OF SULTAN HASSAN, CAIRO.

Photo-engraved from half-tone negative on Carbutt's New Process Plate. Original negative on a Carbutt Ortho. Plate by Alois Beer, Photographer to the Emperor of Austria.

LIBRARY OF THE UNIVERSITY OF ILLINOIS These results were obtained, so far as I was able, by a judicious use of color filters, my experience in this work proving that these must be regulated in their density and colors to suit each individual color creation, should the artist desire the best results.

Setting the ortho plates aside and experimenting with color filters alone, I obtained such values as I desired upon plain, ordinary plates, or what we would call undyed by any so-called optical sensitizer.

As a test of the correctness of my work, I call attention to the small charred stick or piece of carbonized wood at the bottom left corner of the tamarack block in which the ax is inserted. This charcoal stick gave in the light of the sun, and at the angle of view, a radiance and shimmer seen in the filmy soap bubble, or iridescence of peafowl plumage. How faithfully these tints have been delineated, each one may judge by experiment himself.

The single line screen values were obtained from one cross-line lined screen, and the same screen occupied the same position for all four-line negatives. This is the invention of my co-laborer in this work, A. C. Austin, of Albany, who has given much attention to tone values in this work, an instrument for the highest attainment in the same being at this time in preparation.

The printings are from four blocks, and printed in such a manner as most readily lends itself to further the attainment of the results I had set myself to secure, viz., atmospheric effect and the production of a picture containing somewhat of those aerial grays so inconspicuously conspicuous in the masterpieces of color work.

If we have made the first step in a simple, honest effort to create a similar impulse which may ultimately encompass these ends, then our labors have not been in vain.

MACFARLANE ANDERSON.

# HALF-TONE ENGRAVING—THE CARE OF THE SILVER BATH.

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AM satisfied that the reason more photographers do not take up and learn the engraving processes is the fact that the old wet-plate method of making negatives is by far the best to use. The older photographers that were familiar with it in the good old wet-plate days dread to take it up again, while the later ones hesitate about taking up a process they know nothing about.

For myself I used the wet plate many years before dry plates were thought of, but laid it aside entirely after their introduction until I took up the half-tone engraving process. I can say that I was then like a good many more to-day, I dreaded to take it up again; but after becoming familiar with it I would not discard it under any circumstances. Aside from the economy of using wet plates, there are qualities they possess for copying, making lantern slides, or for almost any purpose where time is not an object, that the dry plate is notably lacking in.

Any process or method that is practical, though difficult, becomes easy to the person that is determined to master it. One-half of the

terrors are taken away if a perfect understanding can be given of the principles involved. The aim of this article is to describe the making up and care of the silver bath in a plain, matter-of-fact way that cannot fail to be understood.

The Making-Up and Care of the Silver Bath.—How to Make up New.

The first and most important requisite is to have pure water—distilled water, if a still could be had for the purpose—and then use it while fresh. In the absence of that, melted ice (natural ice), and if that is not to be had, clean, soft rain water will answer equally well. The principle to understand is, how to purify it and put it in the proper condition. It is best to have two baths; that is, twice the quantity of solution should be made up that is wanted for actual use. If the bath-holder will hold I gallon, then take 2 gallons of melted ice or clean, soft rain water, put in a large clear glass bottle, and in this dissolve I ounce nitrate silver, making sure that it is the least bit alkaline, by dropping in four or five drops of concentrated liquid ammonia; shake up and stand out in the sun until it clears up. It will first turn pink, then brown, then black, and the organic matter will settle to the bottom. Sometimes it might be the case that the water would contain so much organic matter that it would form on the sides of the bottle, thus preventing the solution from becoming clear. It should then be filtered into a clean bottle and set out in the sun again, when it will clear without any further trouble. It should now be filtered until the solution is perfectly clear. Now add nitrate of silver until it will test by a hydrometer 42 grains to the ounce. Set out in the sun again for a day or more, then, if filtered twice more, it should be as clear as crystal. And now is the time to add chemically pure nitric acid, a drop at a time, and after shaking thoroughly it will turn blue litmus paper a decided red. The bath is now ready for use.

To filter the bath, absorbent cotton should be used, and enough put in the neck of the funnel, packed so that it will take not less than one-half day to filter 2 gallons. Would be better if it would take a little longer.

From the description given it may seem a tedious undertaking, but in actual practice it is not so. After a beginning is once made a little spare time now and then will keep everything going along in the proper order. If the instructions here given are faithfully followed, the results are sure to be good. The mistake that is usually made is being in too great a hurry. If the acid is added to the bath before it is perfectly cleared and filtered, trouble will result; and here, especially, the old adage will apply—"haste makes waste," and less speed.

#### FILTERING THE BATH.

If the bath is in constant use, it should be filtered at least once every two days.

The Collodion.—It is not in the province of this article to describe the making of collodion, but it will not be out of place to say that photographers, especially those using a moderate amount, would practice

economy in purchasing Anthony's negative collodion. It is a first-class article, and always reliable; can be depended on to give good and even results.

## WHEN AND HOW TO RENOVATE THE BAIH.

The first indication that the bath is deteriorating shows itself in the tendency of the developer to crawl from the edges of the plate when poured on. The reason of this is that the bath has an undue amount of alcohol, and the sensitized plate contains it also, and when the developer is poured on it, it either crawls or forms in streaks over the plate. If the results otherwise from the bath are good, this can be counteracted by the addition of a small quantity of alcohol to the developer, but for a time only. The time is soon at hand when the bath will have to be renovated. By this time, also, the bath will have become overcharged with the iodides. To renovate the bath means not only to get rid of the alcohol, but a good portion of the iodides as well. The surplus iodides must be got rid of first. To do this, take an equal quantity of pure distilled or cleared ice water, put it in a bottle large enough to hold all, or in two bottles with an equal quantity in each, and pour the bath into this. A milky precipitate will be the result. Let this settle and filter. The milky precipitate is the surplus iodide, of which you are now rid.

The next thing in order is to get rid of the surplus alcohol, which is done by putting the bath into the evaporating dish and simmering down to about the original quantity. The bath has now to be cooled, well filtered, and then tested for strength.

If too weak, add more silver. If too strong, add more distilled or cleared ice water. Filter again and test for acidity, and it is ready for use. The bath should always be acid enough to turn blue litmus paper a decided red. A bath can be renovated in this manner as much as two or three times, but after this it seems to become charged with other organic matter that not only makes it slow working, but gives feeble images without body or crispness. The bath should now be treated as described, to get rid of the surplus iodides, then put in the evaporating dish and boil down until it is entirely evaporated. Then keep on the heating till it is fused.

When fusion has taken place, turn off the heat and stir with a glass rod till the fused mass is entirely cold. Do not forget to stir the mass till it is cold; otherwise, in cooling, it will form a hard cake, and the

contraction will break the evaporating dish.

As much distilled or cleared ice water as the original bath solution should now be added, and, when dissolved, filtered. It should then be set out in the sun two or three days, filtered at least twice more, lastly acidify, and it is ready for use.

### A POINT TO BE REMEMBERED.

When making up a bath never add the acid till the bath is thoroughly

By paying strict attention to the rules here laid down, keeping your bottles and dishes scrupulously clean, and at least keeping two baths, so that when one gets out of order, the other can be put in its place, you need never be without good results, at least so far as the bath is concerned. M. Wolfe.



Lawrence (Mass.) Camera Club.—At the annual meeting, held April 3d, the following officers were elected: President, John Lord; Vice-Presidents, Caleb Saunders, J. H. Greer; Treasurer, Carl H. Graf; Secretary, Richard A. Hale; Librarian, Miss Carrie J. Pingree; Directors, Miss Mabel Noyes, E. Braithwaite, and G. C. Cannon. The day for meetings was changed from Wednesday to Thursday.

This Club is in a flourishing condition, having good darkrooms, enlarging apparatus, etc.; about forty members.

THE DEPARTMENT OF PHOTOGRAPHY OF THE BROOKLYN INSTITUTE will hold its annual exhibition from May 25th to June 3d, at the Art Building, Brooklyn.

The exhibition will be divided into two sections. The first, or Amateur Section, will be limited to members of the Society, who will exhibit photographic prints and lantern slides as specimens of the work done by them during the past year. The Second section will be devoted to professional photographers and the trade, the exhibit consisting of prints made on the various kinds of papers, specimens of process work and printing, and samples of cameras, lenses and new and novel apparatus. The Amateur Section will be divided into two classes. Class A, where the entire work is done by the exhibitor; and Class B, where the negative is made by the exhibitor and print by another.

Artistic certificates of merit, suitable for framing, will be awarded to the best pictures and lantern slides in Class "A" by three competent judges, to be selected by the Society.

A souvenir catalogue will be presented to each visitor to the exhibition, and will fully describe all exhibits, both in the amateur and professional sections.

Any one wishing to exhibit in the Professional Section should apply before May 10th to Myers R. Jones, Chairman of the Exhibition Committee, 96 Remsen Street, Brooklyn, for entry blanks and further information.

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NEGATIVE BY W. M. MORRISON.

PRINTED ON

THE AMERICAN ARISTOTYPE COMPANY'S

"ARISTO-PLATINO."

# ANTHONY'S

# Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

VOL. XXVI.

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No. 6.

#### SUMMER WORK.

THE question between hand and tripod cameras seems to have been answered by a compromise, and this year sees the almost universal adoption by amateurs of cameras that can be used both as hand, or detective, and as tripod cameras. This seems to us only as it should be, for there are occasions when the hand camera is absolutely essential, and it is also recognized that for really serious work examination of the image on the ground-glass is imperative. We reiterate our remarks of last year, and maintain that the camera must be on a tripod and careful attention given to composition and focusing in order that really artistic and valuable work may be done. It is true that with the hand camera many exquisite bits have been obtained, but it is also true to a very large extent that these were greatly the result of chance. The majority of cameras are fitted with extremely small finders, the images on which bear a very uncertain relation to the image on the groundglass. Again, this image is so small that it suffices only to give a very hazy idea of the actual picture that is obtained. Then, again, there is a great temptation to disregard all proper use of diaphragms, to guess at the focus, and to give an exposure which may or may not be correct. In a great many cases the speed of the shutter is entirely unknown, and one diaphragm and one speed of shutter are usually used the year around.

When the camera is on the tripod it is an indication that the operator has determined upon some deliberate work. Care is exercised in composition and focusing, and the image, of the size that it will appear in the finished picture, may be properly examined.

Some of our best workers have absolutely denied the right of the hand camera to earnest consideration, but have now come to the conclusion that the hand camera certainly has its uses, but that for careful and representative work the camera must be upon a tripod. This year has seen the introduction of many new cameras, and all of them are certainly of exceedingly high merit. One we have in mind is a magazine camera designed to carry cut films. The magazine arrangement is an exceedingly ingenious one, and, having tested it in every possible way, we can thoroughly endorse it. Twenty-four cut films are loaded in one motion, and a turn of a button drops them alternately. Another camera is in the form of an opera-glass, one side being used as a finder and the other as a camera. By means of this instrument the object may be seen right up to the moment of exposure, and it certainly should prove useful for photographing rapidly moving objects.

The general tendency has been towards making cameras as compact as possible, and the folding camera seems to have almost entirely replaced the old hand camera. Of course, the folding camera possesses the disadvantage that the front has to be dropped and the camera racked out before it can be used. This operation not only takes a little time, but draws the attention of passers-by to what the photographer is doing; but, after all, when one considers the large amount of space saved and the decrease in weight, this objection does not amount to very much. These folding cameras are indeed models of perfection, fitted with swing-front or swing-back, or both, with attachment for tripod, rising front, revolving diaphragms, focusing scale, finder, good rapid rectilinear lens and excellent shutters. They should indeed be a boon to the photographers. For details we would refer our readers to our advertising columns.

When in possession of such a camera the use of every part must be clearly ascertained. It is absolute folly to attempt to photograph until the possibilities of the camera are fully known to its possessor. The finder and lenses will probably be dusty, as the camera may have stood on the shelf of the dealer for some time. All parts should be carefully cleaned and the lenses carefully polished with a piece of chamois skin. The focusing arrangement should move readily, but not too easily; in other words, it should be capable of rapid adjustment and should set exactly where it is put. If the camera is fitted with a swing-back or a swing-front, these should be fixed at right angles to the base of the camera, and should be so left until the camera is used on the tripod. We ourselves do not recommend the use of either when the camera is held in the hand. Do not attempt to make time exposures when holding the camera in the hand; there is always sufficient motion in the body to cause blurring, although proper pictures may be obtained if one can rest the elbows on some solid object. When inserting the slide or changing the plate-holder do not think it is necessary to do this in broad sunlight, but, if possible, take the camera in some shady corner, or, under all circumstances, turn that side of the camera away from the sun.

The question of exposure is one that hardly receives from the handcamerist the attention to which it is entitled, considering that it plays the most important part in the production of good negatives. The ama-

teur is prone to forget that the actinic power of light is constantly varying, that varying conditions require consideration, and that different batches of plates from the one maker may, to quite an appreciable extent, vary in speed. And even when those handy assistants known as exposure meters are employed, this latter fact must be carefully borne in mind, and a test made of each emulsion before placing implicit reliance on the numbers given in the direction sheet which accompanies each instrument. The numbers given are probably the average of tests of various emulsions supplied by each manufacturer, but these numbers should really only serve as a guide for the ascertaining of the correct value to be assigned to the plate to be used. Having once ascertained the correct value of a plate of a certain emulsion, and being assured that the plate is in other ways up to the standard, the photographer will do well to lay in a stock of plates of the same emulsion, and so, without further testing, be in the possession of a batch of plates with the properties and speed of which he is fully familiar. Purchasing plates by the dozen is sometimes rendered necessary through lack of funds to lay in a good supply, but, whenever possible, it will be found more economical and conducive to good results to invest in a sufficient quantity to serve for a considerable period. Professional photographers recognize this, and, having obtained a sample that exactly suits their requirements, purchase the whole of an emulsion.

The shutters supplied with many hand cameras, and, indeed, the majority of shutters of all kinds, give no indication of the time of exposure other than quick, medium and slow instantaneous. The higher priced shutters, such as the Bausch & Lomb, are fitted with a dial, by which any exposure from the  $\frac{1}{100}$  of a second to three seconds may be accurately given, and with such instruments exposures may be exactly duplicated, giving the photographer the great advantage of working with a known constant. The improved Prosch triplex shutter is also a very exact instrument. But with any and all shutters that may be employed, the capacity of each should be known to its user. The quick instantaneous, even if the exact time be not known, should be thoroughly understood as giving a sufficient exposure only when certain conditions of aperture and lighting are most favorably present. And so with the medium and slow speeds. The shutter is a wonderful assistant when properly understood and employed, but is, we believe, responsible for more utter failures than any other factor in the making of a photograph.

Finally, let us urge the beginner to think before each exposure. Within the last few days we have had several cases brought to our notice, indicating absolute lack of application of common sense to the use of the camera. In most instances, the beginner thought it necessary for the light to be full on the camera while the subject itself was in the deep shadow. Know the camera and its capacities so thoroughly that it practically requires no attention, and devote all your time to the subject and its character.

#### DRY PLATES FOR PROCESS WORK.

THE photo-engraver has for many years ridiculed the idea of using dry plates, or any modification of them, for the production of negatives for line and half-tone engraving; and, indeed, when one considers the quality of a negative necessary for this work, it is not to be marveled at that the engraver views any radical change in his methods with skepticism.

The first point to be considered, of course, is as to whether there is any necessity for a change; that is, whether the adoption of gelatine plates brings with it sufficient advantages to warrant the laying aside of the materials and methods that have for so many years been employed. On this point one cannot but recall the change from wet to dry plates for view and portrait photography, and we feel that if, with the ordinary photographer, there were sufficient inducements to warrant the practical exclusion of wet plates and the universal adoption of dry plates, the same causes that led to such a change are worth considering here.

We will not enter into any discussion as to the relative merits of negatives that have been made on wet and dry plates, but will say that it is conceded that the wants of photographers are best met by the dry plate, and that the principal causes that led to the change were: (1st) the fact that dry plates could be purchased ready for use; (2d) the general simplification of the methods and materials; (3d) the cleanliness of dry-plate as compared with wet-plate work; (4th) the rapidity of the dry plate and consequent saving of time and labor.

Now, all these considerations apply equally to the photo-engraver. Instead of purchasing the glass and many materials necessary, and being harassed by troubles with silver bath and collodion, he can, with such plates as we are referring to, rely upon obtaining a perfectly uniform article. The only materials necessary are the developers usually employed for dry-plate work, and of these we will speak later. With regard to cleanliness, there is no reason why the hands should be stained at all with the pyro developer, and the odor of collodion and the staining of the silver nitrate are entirely done away with. Again, the saving of wear and tear in the holders is no small item. Those who have seen a wet plate-holder, after a year's service, must have noticed how rotten it is from the action of the nitrate of silver on the wood and metal parts. Again, there will be no necessity for the use of silver in the making of the holder. These holders have always been expensive because of this, and there is no reason why an ordinary holder, made of wood, with the metal parts of brass, should not be efficient.

Perhaps the most important consideration is the rapidity of working with the dry process plate. Time is saved, first, because plates have not to be prepared, and secondly, actual experiment has shown us that where with the wet plate an exposure of five to six minutes was necessary, under precisely the same conditions a properly exposed dry plate was obtained in from forty to fifty seconds. As regards the item of expense, we do not think that when all points are taken into con-

sideration, there will be any balance in favor of the wet plate. When one remembers that plates have to be cleaned, silver bath and collodion prepared and attended to, and the various little but yet important details that are well known to every engraver, the great advantage in a plate ready for use and cleanly in every way will be apparent. Finally, in this connection, we would say that we would assure engravers that just as good results can be obtained on the dry as on the wet plate, and that there is no good and sufficient reason why the use of dry plates for the production of negatives for engraving should not become universal.

It must, of course, be borne in mind that these plates are much more sensitive than the ordinary wet plate; therefore, the engraver must replace his well-illuminated darkroom with a room lighted only by ruby light. In fact, these plates must receive as much care with regard to exposure to light as is given to the ordinary quick plates used in landscape work. On taking out one of these plates and examining it by the red light it will be hard to tell at first which side is coated, so fine and free from grain is the emulsion. However, by pinching one corner of the plate between the moistened thumb and finger, the coated side can easily be recognized; or, if one finds out first how the plates are packed, all trouble will be obviated. Indeed, when these plates are examined in daylight, the extraordinary freedom of the coating from grain is very noticeable. The procedure is practically the same as in making a copy on an ordinary dry plate. The plate is placed in the holder in position and exposed to the object, the reversal being obtained by means of a prism. Development yields a rich olive-brown negative with absolutely clear glass.

The following formula is an old and well-tried one with these plates, and will be found to give, with properly exposed plates, negatives that are of such character as to be ready for use without intensification:

No. 1.	
Sulphite of soda 4	ounces.
Pyro	ounce.
Sulphuric acid	drops.
Water20	ounces.
No. 2.	
2101 21	
Carbonate of soda (gran.) 4	ounces
Water20	6.6

In order to get density a smaller proportion of alkali is used, and the mixture we have found to answer best for line negatives is No. 1, 1 ounce; No. 2,  $\frac{1}{2}$  ounce; water,  $1\frac{1}{2}$  ounces, and  $\frac{1}{4}$  of a dram of a 12-grainsto-the-ounce solution of potassium bromide. The image should develop slowly, and should be under control. However, the plate will not fog under any circumstances in this developer.

After development, wash in water, and fix in the usual solution of hyposulphite of soda. If the developer is used repeatedly it will be found necessary to clear the plates with a mixture of hydrochloric acid, \frac{1}{2} ounce; water, 20 ounces. For half-tone work the prism is almost

universally used, thus dispensing with the stripping of the film. The addition of the prism increases the exposure about ten to fifteen seconds, but, when one remembers that the stripping of the film is dispensed with, this is by no means an obstacle.

This application of dry plates to process work cannot be called new. Many workers have been for years using very slow dry plates with considerable success. It is, however, only recently that dry-plate manufacturers have turned their attention to the production of plates especially for this work. Of the American plate-makers The Standard Dry Plate Company and John Carbutt are ready to supply these plates.

The Climax process plate, manufactured by the Standard Dry Plate Company, is made from an old and reliable formula, and should be given a thorough trial.



THE German-Austrian Alpine Club have made arrangements for an international photographic exhibition, to take place at Salzburg, Austria, from August 1st to September 15th of this year. Photographers of all countries are invited to send in views of mountainous scenery. The Alpine Club numbers at present 36,000 members, and this alone is sufficient guarantee that the exhibition will be one of the largest and most interesting yet held. The subjects need not necessarily be of hilly scenery. Pictures of interest showing national characteristics and costumes are solicited. Professional and amateur exhibits will be kept apart, and prizes and diplomas for the best work will be awarded.

Two other competitions, referred to fully under "Societies," should interest our readers.

Photographers abroad are endeavoring to add to their business by what is known as note-paper portraiture, which we presume consists in supplying the sitter with note paper with the sitter's portrait in one corner, or perhaps a view of a residence, or something of the sort. This, if very nicely done, might be productive, but we doubt very much whether the general public in this country would adopt it sufficiently to pay for the necessary outlay in advertising. There is no doubt but that it has frequently been tried among amateurs, and, indeed, by some professionals here, but we have not heard of any extended introduction. After all, with half-tone plates so cheaply and easily produced, it

seems hardly worth while to bother with the making of actual photographs on note paper.

"The Shashin-Sowa," Volume III, No. 9, a Japanese monthly devoted to photography and edited by Y. Isawa, comes to hand, and we note that a great improvement has been made with this number. The improvement consists in the addition of some half-dozen pages in English, to which our friend W. K. Burton is a contributor. The number is illustrated with an excellent collotype from an electric-light negative by Genrokukan.

W. H. Jackson, writing from Calcutta, speaks in the highest terms of Carbutt's Eclipse films and says that the temperature of the air and water seems to have but little effect on them. We believe he has done some marvelous work, and his results will be a strong argument in favor of the use of films as against the heavier glass plates.

Two excellent prints come to us from José Ramirez de Arellano, of Havana, Cuba, showing what country life is like out there. We would extend our thanks for the same.

W. Ethelbert Henry, of the *Photogram* staff, writes us regarding our report of his demonstration of emulsion-making, which report appeared in our April issue. He says: "I note your preference for orange glass bottles in place of stoneware. At the same time you say, of course, that a glass bottle, colored or uncolored, in emulsion-making, cannot be worked in daylight at all, as with the stone bottle. This statement is rather misleading; as a matter of fact, I used orange-colored glass bottles at the demonstration, but have often used them on other occasions without injuring the emulsion, which is a slow one. For various reasons I prefer stoneware bottles, and have not yet suffered from dirt lurking within them. Of course, it is advisable to wash such bottles thoroughly, both before and after using. I hope some of your readers will try the method and formula; I feel sure they will find that the results will amply repay them for their trouble."

Some of the troubles in toning may be due to impure gold and platinum salts. Low price is not a guarantee of purity, and economy in this direction will lead to trouble. A saving of a few cents on gold or platinum may mean a loss of time and material. Indeed, all the chemicals used by the photographer should be pure, and for the best materials a fair price must be paid.

Our publishers have just issued their 1895 catalogue. It contains many novelties and much matter of considerable interest. Not the least interesting novelty is Harry's improved electric retouching device. As a time and labor-saver, and for the production of the finest kind of retouching, it is unequaled by any of the devices that have been put forward in imitation of it.

H. E. Davis says: "The first necessities for success in the making of lantern slides are great patience, great care and exceptional cleanliness. It must be recognized that, in exhibiting a slide on the screen, we are practically putting our work under the microscope, and any technical defects, however minute, will be much exaggerated. This applies not only to the defects on the film, but to roughness or displacement of mounts, bubble marks, scratches, finger marks, or other irregularities."

Mr. Crookes uses for the making of spectroscope slits clear transparent quartz, ground to an angle of 90 degrees. "The main part of the grinding of the slab of quartz (4 millimeters thick) is at an angle of 45 degrees, and a subsidiary small slice is ground from the under side at a similar angle, making the actual edge angle one of 90 degrees. The under flat face is covered with an opaque substance, and so permits no light to pass, while the light received on the sloping sides of the jaw is entirely deviated out of any injurious path by refraction. Mr. Crookes says: 'With the pair of jaws now in use I can take excellent photographs when they are only .0001 of an inch apart.' The refinement of photostereoscopic work now possible will thus be greatly increased."

A NEW magazine lantern seems to have found favor with our English friends. A reservoir, containing some fifty slides, travels under the lantern, and each slide in succession is brought into position by the turning of a handle. During the changing a sheet of matt celluloid is brought in front of the condenser, giving, it is said, a pleasing dissolving effect. By this method many little hitches and mishaps may be

avoided.

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In a lecture on "Modern Lantern-Slide Methods," Mr. John Carbutt describes the following method for securing a sharp focus of the image when reducing in the camera: "I first get the size of reduction desired and an approximate sharp focus; it is here that at times it is difficult to decide on the sharpness of the focus. To render this easy of accomplishment I remove the negative and replace it with a positive of a line subject, such as I have here, which happens to be a map of the streets of New York. Placing the film side towards the lens, you can, with ease and accuracy, make a sharp focus; then replace the negative and make the exposure.

The Practical Photographer is one of the liveliest and best illustrated English photographic publications, always interesting and practical. A double number—"the Child Studies' number "—is promised for July.

A LETTER from Mr. W. H. Jackson, dated Singapore, tell us that his expedition so far has been a great success, especially the photographic part of it. His camera and outfit, which he purchased from our publishers, he says, have given him the greatest satisfaction, and the whole



NEGATIVE BY
H. L. CHAMBERLAIN, KNOXVILLE, TENN.

PRESS OF FLEMING, SCHILLER & CARNRICK, N. Y.

LIBRARY OF THE ILLINOIS UNIVERSITY OF ILLINOIS kit is in as perfect a condition as when he left New York, although he has been in the tropics for over two months.

From a newspaper clipping sent to us we see that Mr. Jackson was arrested for photographing a fort in the neighborhood of Mt. Wallich, Singapore, and was detained for about an hour, having to appear at the police court next day. Mr. Jackson fully admitted the technical offence, but claimed that he had not trespassed intentionally on military ground, and was not aware that Fort Palmer had appeared in one corner of the photograph. The military officials refused to withdraw the case. The magistrate dealt with the case on its merits, and consequently dismissed it.

Writing on studio furniture and accessories, Valentine Blanchard remarks: "In the employment of drapery, such as curtains, table covers, etc., it is most important to bear in mind the importance of texture as well as color. The same, of course, applies to carpets. Frequently the wrong side of an Indian or Persian carpet will help the effect of the picture far better than the front, for though the pattern will still be well marked, the contrasts will be lessened, and more harmony will result in consequence."

"The figure must occupy first place in a portrait, and every accessory must be subordinate. When the critic, in praising a portrait, dwells immediately on the lovely pattern of the lace, or other secondary detail, that picture is condemned by the praise; and in like manner, should admiration go to the chair or couch, or any other article of furniture, the photographer has failed as an artist—the furniture was in the way."

The Bausch & Lomb Optical Company write regarding their well-known shutter, and asks us to record an improvement, which, while being simple, nevertheless permits the attainment of artistic results otherwise practically impossible.

With the excellent shutter made by this company a double exposure is possible, in which sharpness, with detail in the shadows, may be obtained by a long exposure with a small stop, and roundness by a short exposure with a large stop. No apparent loss of sharpness occurs, and the results will be found very satisfying. The Bausch & Lomb Optical Company find that their shutters can be made to accomplish this purpose without detriment to their other admirable qualities. They will supply them, if desired, at the regular price, and will change those now in use at a nominal charge, giving all necessary instructions.

Mr. A. P. Yates, of Empire State Express fame, who has in all his work used the same shutter, has had the above improvement added, and has obtained very satisfactory results.

Considerable interest is evinced in the application of dry plates to process work. From Constantinople, Berlin and Paris we have re-

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ceived requests for further information. In our advertising columns will be found details as to price.

Dana, of Pittsburg, is making a sensation with the Anthony electriclight apparatus. Pittsburg is just the town to show the merits of the new system of lighting. Instead of photography being possible for only one hour a day, patrons can now be accommodated day or night.

In the *Iron Age* for May, James F. Hobart discusses the use of photography in the workshop:

"Photography has become so necessary to the manufacturer that he can no more do without it than he can dispense with the draughtsmen who design his tools and machinery, or the salesmen who turn the manufactured products into cash. Notwithstanding that photography is so valuable, the manufacturer has not employed it to the extent he might, and by all but a few concerns photographing is done in a loose haphazard manner, sometimes by one and sometimes by another 'photographer to the trade, who may chance to be available at the time pictures are needed. As a result, there is not even a ghost of a system in the preparation of pictures, or in the sizes used. Neither are they got out always at the time and in quantities to suit the man who pays for them. Another thing is the ownership of the negatives. The photographer claims them, and as he has got them, and possession is said to be nine points of the law, he generally keeps them and makes the manufacturer await his pleasure. Indeed, it has been stated that the only way to get a negative away from a photographer is 'with a club,' and there seems to be a good deal of truth in the statement.

"Once equipped with the required apparatus, the necessary material and 'know how,' photographs can be turned out at will, and usually in a small fraction of the time required by professional photographers to deliver the same amount of work. This is not because the shop operator can do work quicker than the professional, but because he has only one man's work to look after, instead of having to cater to twenty or thirty customers at once, when, perhaps, all of them want their work first, and 'day before yesterday' at that."

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The National Camera Club will hold a National Amateur Photographic Exhibition at Washington, D. C., on July 1st, 2d and 3d. Many valuable prizes are offered, among which we notice two solid gold camera watch charms, made by Tiffany & Co., given by our publishers, one for the best exhibit on "Aristo Platino" and the other for the best exhibit from negatives on Climax plates.

For catalogue and full particulars address B. M. Clinedinst, 1207 F Street, N. W., Washington, D. C.

All communications for the July issue must reach us on or before June 22d.

# INSTALLATION OF CARBON PRINTING.—THE TISSUE AND ITS CONDITION.

AST month the sensitizing of the tissue was dealt with on the assumption that it was not purchased in the sensitive state. It will always be well to test its condition before commencing the day's work, and it is a very simple matter. If a small strip of it be placed in warm water—about 100 degrees Fahr. or so—and the pigmented coating begins to dissolve in a minute or two, and can be easily rubbed off between the thumb and finger, it is all right. But if it refuses to dissolve, it has—from long keeping or other cause—become insoluble, and therefore it will be quite useless to attempt to work it. Before now I have known an entire day's work being rendered futile through printing on insoluble tissue which, by the simple test just referred to, would have been avoided. A case of this kind is only likely to occur with beginners, for it is more than probable that it will seldom, if ever, be repeated by the same individual.

Sometimes, although the pigmented coating dissolves away freely, its solution may be accompanied by a thin but decided film floating about in the water. This is a very superficial layer of nearly insoluble coating. It may be due to the tissue being exposed to some pernicious vapors while drying—fumes from burning gas or emanations from a foul drain for example. Or, what is equally as probable, the tissue has been allowed to lie exposed to a moist atmosphere after it was dried which has induced partial insolubility on the surface. When tissue is in this condition it is said to be "tinted," in other words it is, to an extent, fogged.

Tissue that has acquired but a moderate degree of tint need not be discarded. Indeed, for some negatives, it is a positive advantage, and, being aware of its existence, from our simple test, it can be utilized for every class of negative by a little modification in the working. This film, though insoluble as compared with the under layer of the gelatinous coating, will dissolve if a little longer time be given it, or the water be used a little warmer. Therefore all we have to do is to print a little deeper in the first instance, and to develop for a longer time, or in hotter water. Then every trace of the fog or tint will be washed away. This condition of tissue, as just said, is often advantageous. With hard negatives, those of the black and white-"soot and whitewash"-type, the delicate tones in the lights are sometimes difficult to obtain with freshly prepared tissue, and to secure them experienced workers often expose the printed tissue, if new, to light for a short time, so as to bring about the very condition we have here, namely, a superficial layer of insolubility.

Another timely precaution to take is to test the tissue for sensitiveness as well as solubility, so as to ensure correct exposure. Carbon tissue, from the time it is dried, whether it is manufactured in the sensitive state or is sensitized afterwards, keeps on increasing its sensibility until the time it becomes insoluble and useless. Therefore, it is always advisable to ascertain how sensitive it really is at the time of using.

Here is a simple way of doing so. Select a small negative, one that is not very dense, and keep it, in a printing frame, specially for this particular purpose. Place a piece of the tissue behind it, and make a print, giving always one and the same exposure, say two or three tints by the actinometer that is in constant use. When printed, mount it on a bit of single transfer paper and develop. According as the print is over or under exposed, so, after very little experience is gained, will the sensitiveness of the tissue be gauged to a nicety. In carbon printing, as is well known, there is great latitude in the exposure, as any errors, within very wide limits in either direction, can be remedied in the development. But when the exposure is approximately correct, a great deal of time and trouble will be saved in the development of the prints, and correctness can always be ensured by adopting the simple expedient here referred to. As a rule, supposing the tissue has been dried under ordinary conditions, it will for general purposes be found to work better when it is a few days old than when it is freshly sensitized.

As to the keeping properties of the tissue. On this point nothing definite can be said, as all must depend upon the conditions under which it is kept. A little by way of explanation of those conditions, and their influence, may, however, be desirable. may be sensitized one day, and become quite insoluble in a couple of days afterwards, or it may be kept in a perfectly soluble condition for many months. I have myself kept it for six months, and it was then as soluble as it was at first. The chief factor in the case is moisture. the tissue is not properly dried in the first instance, or is allowed to absorb moisture afterwards, it will quickly deteriorate. If on the other hand it is made thoroughly dry, and is kept so, it will keep its solubility for a long period. In the case of its being kept six months, the tissue was completely desiccated in a pure atmosphere, and then stored in a hermetically sealed metal case. Tissue that has taken a long time in drying will not keep so well as that which is dried quickly; neither will that which is sensitized in a strong bath remain soluble so long as that more weakly sensitized. However, tissue if dried and kept under average conditions will remain in good working order for from one to three weeks. As a rule, tissue that is sensitized in the making keeps longer than that which is sensitized afterwards.

I intended to have something in this article about a rather important point in connection with the carbon process, namely, the "Continuating Action of Light," *i. e.*, the prints getting darker after they are printed. This subject, however, is one that is too important to be dealt with in the space left at my disposal. It must therefore be left for a future occasion.

There is one little matter that may be disposed of here. It is the safe edge on the negative which every one knows is necessary. This is generally directed to be put on the film side of the negative, but I prefer it on the glass side, for the following reason: If the negative is a strong one, and happens to have a deep shadow at the margin of the plate and it is masked up sharply, there is sometimes a tendency for the gelatinous film to frill at that point—particularly if the image be

developed on a rigid support—say opal glass. But if the safe edge be on the glass side, the light creeps under it, so that by its vignetting action the abrupt edge is ameliorated, and a softened edge has not the same tendency to frill that an abrupt one sometimes has. The simplest way of putting on the safe edge is to roughly pass a brush, charged with black varnish, round the margin of the plate, covering a quarter of an inch or so wide. If, however, the prints are required with a clean margin, to save mounting, then this plan will not answer, for the masking must then be sharp and clean. In this case strips of thin non-actinic paper—or, if the negatives are small, strips of tinfoil are preferable—should be neatly gummed round the film side, the width of the margins desired. When the prints are on rough paper for which this style of printing is generally employed—there is very little tendency to frilling, however abrupt the safe edge or deep the shadow may be.

E. W. FOXLEE, in Autotype Notes.

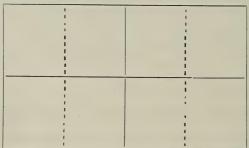
### ON COMPOSITION IN LANDSCAPE.

COMPOSITION is really no less necessary in landscape work than in genre pictures. This truth, which is more obvious to the painter than to the photographer, has unfortunately been rather neglected, yet it is only by accident, by a lucky hit, that any one can produce a pleasing work without acting upon it. Of course nobody can overlook the importance of composition in pictures where the interest is centered in one or more human figures; a little consideration will serve to show that the conditions of landscape work in that regard are essentially similar. In both there is the same need of having the eye directed especially to certain points on which it is to dwell. In the first class of pictures, as will be plainly seen, the chief points of interest, owing to their nature, must on the average be usually fewer, and always more distinct from the background, than those of a landscape. Hence in such cases the underlying system of composition is commonly reducible to one or other among a few simple classes. Either the eye is led up to the principal figure by the surrounding objects, or else the chief figures are disposed in one or more groups of appropriate structure. Painters and critics have enlarged upon this subject, and distinguished a great many orders of composition, but for present purposes some such rough and ready classification will serve, and is, moreover, sufficiently true to the facts. The subject is one well worth careful observation, and examples of one or another system of composition can be found in the first half-dozen prints or pictures you come across.

In landscape, however, the conditions are more complex. Composition is not less to be attended to, but its place, especially in photography, is less obvious for the most part, and the system followed in any given example will not usually be so easily distinguished. The interest is, so to speak, more diffused; more of the success of the picture depends on the surroundings and background than on any special points of interest, and the latter are again more closely related to their surround-

ings, especially in what may be called pure landscape, in works dealing with paysage pure and simple. But points of special interest there must be in every such picture if it is not to degenerate into insipidity, and the disposition of these points of interest is the more important as the points themselves are less glaring and "outstanding." And obviously the chief office of composition under such circumstances is to attain variety.

To arrive at some idea how this is accomplished, let us take any successful landscape (a painting is more likely to fulfill the conditions than a photograph), and divide it into four spaces in the following fashion:



and then mentally divide the two spaces on each side of the perpendicular as shown by the dotted line. Now we shall always find the requirements of composition to be such that the points of cardinal interest in the picture must never be mutually balanced among these spaces. The pleasure which we derive from the work will depend upon its giving us a sense of variety in their disposition. For instance, if the interest of the landscape be centered in two points, they will never be found both below or both above the horizontal line, nor will they be found on the same side of the perpendicular. If there be three cardinal points, two may be below or above the horizontal, but the third will not in any case fall directly above either of the others. If there be four, the spaces containing them will never be found to make a square or any rectangular figure. If these principles be violated, the composition will be found to produce in our minds an impression of stiffness, of constraint, fatal to the success of the work.

Now, when he comes to apply the principles of composition, the photographer is plainly less fortunate than the artist. The painter is in a position of perfect freedom, he can deal with his matter as he pleases, but the photographer must perforce take what is set before him and do the best he can with it. Nature is not always kind to him; if he exercises no discretion of his own, she is likely to make but hodge-podge work of it. A few years ago it was the fashion of publishers to issue sets of views called "Picturesque" This or That. Now for the most part, even when done by competent hands, these were the most unpicturesque affairs conceivable, owing to the artist having taken everything for granted. They were doubtless views of such and such places, but they were not art, having only the value of terrible warnings to show how ill a thing could be done with the best possible intentions. The

remedy, however, is ready to hand, only we must be willing to take some little trouble about it and to think twice before exposing a plate. If the photographer cannot shift his trees and houses about to suit himself, he can always change his point of view, and usually he will find it eminently worth his while to do so, or he can wait for a change in the light—a thing no artist would expect to avoid doing. These and many other precautions are at his command, and if he thinks it hard lines, he should console himself by remembering that when all is said and done nobody else gets a picture so easily as he does.

C. ROTHERHAM.

# LANTERN SLIDES—HOW TO MAKE AND COLOR THEM.\*

BY DWIGHT LATHROP ELMENDORF.

(Continued.)

THESE points are rarely taken into consideration by judges of "prize" slides, yet they must be carefully weighed by the one who desires perfection on the screen.

Oil lamps of the best construction will project enough light through suitable slides to illuminate an 8-foot screen fairly well, but it is impossible to get a sharp image with any form of oil lamp because the source of light is not an approximate point.

The oxyhydrogen jet will illuminate slides adapted to it when magnified up to 20 feet square. For many reasons the author prefers this form of light to any other at present.

The electric arc should be used when any greater magnification than this is desired. The author deprecates the use of the electric arc for projecting lantern slides upon small screens, and considers the effects very glaring and unpleasantly cold.

The arc light is superb for microscopic projections and for slide projections upon enormous screens or upon small screens in the class-room in ordinary diffused daylight.

As many may prefer to make up their own developer, several formulas will be given as used by the author. Some may be able to get better results from other formulas, and they had better do so; the author has not. There is nothing original about the following developers:

Pour the iron into the oxalate, never *vice versa*, and add three to five drops of saturated solution of bromide of potash.

This developer gives beautiful results, ranging from gray to brown, according to the exposure, but will not keep long after mixing.

#### II.—HYDROQUINONE DEVELOPER.

Α.	
Hydroquinone.	15 grains.
Suiphite of Soda Crystais	44 55
Bromide of potash	13. "
Water (pure) to make a total bulk of 10 ounces.	-3

<sup>\*</sup> Commenced in the January issue. Copyrighted, 1894, by E. & H. T. Anthony & Co.

B.

Carbonate of soda	90 grains.
Carbonate of potash	90 "
Water (pure) to make a total bulk of 10 ounces,	

Take equal portions of A and B, to form a normal developer.

This is the most convenient of all developers, as it may be used until it begins to act too slow, when half of it should be thrown away, the remainder filtered, and then an equal bulk of fresh developer added.

When made with pure chemicals and with distilled water, it will keep indefinitely.

#### III.—METOL.

Water	60 ounces.
Sulphite of soda crystals	
Metol	
D: 1 / 0 1	
Bromide of potash (10 per cent.), a few drops.	

Dissolve in the given order.

This is the Cramer formula, and works well, but requires a shorter exposure than either I or II.

It is often necessary to project maps, diagrams, formulas, special solutions of problems, comic drawings and the like upon a screen at short notice.

In order to make a photographic slide of any of these subjects, the drawing must first be photographed and the slide then made from the negative, a long and expensive process when the slide is for temporary use only.

During a long experience in teaching the deaf, using the lantern as a means of illustrating the various branches of study, such as geography, history, physics, etc., and for the purpose of entertainment, some means of writing upon the slides was necessary. In a happy moment, carbon transfer paper was thought of and tried with great success.

By simply laying the carbon paper upon the clean cover glass of the slide and then superposing a piece of thin, smooth-finished paper, any inscription written on the paper with the sharp point of a hard pencil will be found perfectly transferred upon the glass if the latter was perfectly cleaned beforehand. Comic drawings, in fact anything of the kind of suitable size, may be transferred by this simple process of tracing.

The transfer slide should be matted and mounted as an ordinary slide. By transferring upon a gelatine surface which has been treated with alum, color may be applied.

#### CHAPTER V.

#### How to Color Slides.

"Fools step in where angels fear to tread" expresses the author's feelings when about to attempt the description of that which is indescribable.

The first rule to be learned and obeyed is, don't color slides, but tint them.



NEGATIVE BY D. L. ELMENDORF.
SANTA MARIA DELLA SALUTÉ, VENICE.



FLEMING SCHILLER & CARNRICK PRESS, N. Y.

A WHITE-ASH BREEZE.

NEGATIVE BY D. L. ELMENDORF.

LIBRARY OF THE UNIVERSITY OF ILLINOIS Unless one has real artistic feeling and a knowledge of tone and color, the slides had better remain as the developer made them.

Having tried every kind of pigment, paint and coloring matter obtainable, the author has settled down to a few aniline dyes, which have now stood the test of ten years very well. These were not chosen because they are easy to apply—in fact, they are much more difficult to use than some of the pigments mixed with Canada balsam, Damar varnish and other mediums—but because of their brilliancy and wonderful lack of "grain," even when greatly magnified.

The wail from some quarters that aniline colors are fugitive is quite true in a general sense, but by accident the author stumbled upon a certain addition which not only makes the colors quite permanent, but also prevents "creeping" when properly applied. After careful tests for ten years, the author now feels that the colors are reliable, and has prepared them in quantity for the use of others.

When the quantity necessary for ten slides is measured and the cost of the same computed, the expense is but little. Ten drops of some of the colors will color fifty slides.

The principal colors prepared by the author are:

- 1. Light yellow.
- 2. Dark yellow.
- 3. Orange.
- 4. Rose.
- 5. Vermilion.

- 6. Dark brown.
- 7. Maroon.
- 8. Blue No. 1.
- 9. Blue No. 2.
- 10. Violet.

These ten colors are the elements from which countless tints may be formed by mixing one with another in various proportions.

The colors are very concentrated, and most of them should be diluted with clear water before applying.

The amount of water to be added must be ascertained by experiment in order to obtain the depth or strength of color desired.

Light yellow and orange mix in all proportions, forming various tints. The mixture should be diluted with about an equal quantity of water unless powerful colors are desired.

Light yellow and rose form useful tints for evening sky effects and for flesh tints of a brownish tendency. Should be diluted before applying.

Light or dark yellow and vermilion in various proportions give endless gradations from the one to the other, and this is the chief mixture for flesh tints. Vermilion is the most powerful of all the colors, and should be diluted very much.

Light yellow and blue No. 1 mix in any proportions, forming pale greens. Should not be diluted. By adding some dark yellow, warmer and more brilliant greens are obtained.

The coldness or warmth of the green depends upon the amount of yellow added to the blue.

Dark yellow and blue No. 2 yield intense greens, and are especially useful in contrast with those of blue No. 1. Should not be diluted except in special cases.

Orange and blue No. 2 yield a splendid variety of earthy yellows and olive greens, which are very valuable for foregrounds, dead grass, etc.

A very slight addition of vermilion gives rich ochre tints. Should be diluted as necessary.

After applying these orange and blue mixtures it is well to wash off the slide with the same brush wet with water only, to prevent any deposit, which sometimes occurs.

Maroon and the yellows produce numerous tints, passing from yellow and brown to maroon. Should be diluted.

Dark brown is a reddish brown, and should be diluted only a little, say with equal parts of water, unless a very pale tint is required. It will mix with other colors for a variety of tints.

Rose should always be diluted with a large quantity of water.

Blue No. 1, when diluted with 5 to 10 parts of water, is suitable for skies and water, remembering that water reflects the sky and other objects above it, so that plain blue will not always answer for water, even when suitable for the sky.

Each portion of the day and the year has its own peculiar tints, both in sky and water, nor are all portions of either alike at the same time. One must study these wonderful color effects in Nature if any realistic results are to be hoped for.

Blue No. 2 is a greenish blue, suitable when diluted for either sky or water under certain conditions of atmosphere and light.

Violet, although apparently a powerful color, is not so, and is difficult to manipulate. It does not mix well with other colors, but beautiful purple tints may be obtained by first applying the violet to the part to be colored, and then, after it is set, but not dry, applying a very weak solution of vermilion until the desired tint is obtained, a process of blending which is quite difficult to the uninitiated.

With these few hints as to mixing the colors for various tints, the author hopes that the way is made clear. Thousands of tints may be obtained after the same manner.

### REQUISITES.

- r. A nest of white porcelain saucers should be obtained, such as microscopists use. They are invaluable for slide work, as each saucer forms a cover for the other, so that all dust is excluded.
- 2. Each color should have a brush of its own, which should never be used for any other. The author uses three each for the majority of colors, Nos. 2, 3, and 4, soft round camel's hair. They should be well made, and come to a point when wet.

For skies and water, or for general tints and blending, half-inch flat camel's-hair brushes should be used.

- 3. A large glass, capable of holding a pint of water, should be at hand, convenient for immediate use at all times.
- 4. For the purpose of adding water to the colors, there is nothing better than a rubber pipette, often used as medicine droppers, or for filling fountain pens.

- 5. A clean cloth attached to the table for the purpose of wiping color from brushes.
- 6. A retouching frame, such as is used for retouching negatives, with a very fine ground-glass.

The author colors all his slides by means of a Welsbach incandescent gas burner, which gives a quality of light almost exactly like the oxyhydrogen jet.

7. A room without hangings, draperies, or carpet. The floor should be dampened before beginning the coloring. A room especially arranged for the purpose is advisable if the colorist desires any comfort at all in the work. Dust is a most vexatious nuisance. One little particle falling on the wet slide will stick closer than a brother, and will be painfully evident on the screen.

The gelatine surface of the slide takes the colors well if it has been



treated with a saturated solution of alum as directed under development. The slide to be colored should be placed on the ground-glass of the retouching frame, with a narrow strip of wood, about an eighth of an inch thick, under the lower edge so as to raise the slide slightly from the ground-glass, in order to prevent capillary attraction. The mirror and light should be adjusted so that the slide is properly illuminated. The sky should be colored first, and it is sometimes advisable to turn the sky toward the bottom or sideways during this part of the work; "gumption" will suggest the most convenient positions. Put a few drops of blue No. 1 in a saucer and dilute it with 8 parts of water, more or less. Take the half-inch blue brush, wet it full of clean water and moisten the sky evenly and thoroughly, using plenty of water in

the brush. If the brush is not full of water it is liable to stick to the gelatine or cause lines. Then draw the brush between the thumb and forefinger to remove most of the water, dip it in the dilute blue color in the saucer, and brush quickly back and forth over the wet sky.

Don't allow the brush to stop on the slide. By using dilute color and

applying many times, a perfect sky may be obtained.

When a blended sky is desired, first wet the plate as before and take the half-inch orange brush, dip it in a very weak solution of orange or any other color and paint the lower portion of the sky with it, then dip the brush, still full of color, in clear water and gradually work up toward the zenith with this very weak color, then wash out the brush in water and blend from the bottom to the top of the sky. Then take the blue brush and wet it with water, dip it in the dilute blue color and brush across the zenith of the sky, gradually blending the blue down about half way. This blending operation is very difficult to describe; it really ought to be seen to be thoroughly understood. The plate should be turned so that the color does not flow down over the foreground.

Large expanses of water are treated in a similar fashion.

Any number of harmonious tints may be blended in the same way, being careful to blend the colors in their proper order.

The author's method is to color the skies of several slides and place them in a drying rack to dry before any other coloring is attempted.

When the sky is dry, other portions of the slide may be colored by applying the color to the dry gelatine.

Never try to apply another color to the slide until the first one has dried, unless blending is the object in view. In coloring trees, first give them a general pale tint of green and then work out each tree in detail with various tints of green.

Detached branches of trees and conspicuous leaves demand careful treatment, which needs long practice, a steady hand, and an accurate eye. Flesh needs most careful treatment, and careful and repeated application of very dilute colors, until the desired effect is gained, is the best method. It is not always necessary to color every part of a slide. Very frequently the slide in some portions presents the natural appearance of the object, and color would only detract from the general effect.

If the slides are colored by ordinary daylight the effects will be rather surprising when viewed at night by means of the lantern. The arc light will reproduce the colors almost similar to day light, but neither oil or gas will accomplish this for physical reasons which were mentioned in the introduction. Therefore the author uses the Welsbach incandescent gas burner as the means of illumination. Slides should be colored for the light used in projecting them on the screen, and used with that light and no other.

After one slide has been colored successfully, so that the worker is satisfied with its effects on the screen, other slides may be colored by ordinary daylight, using this slide as a guide to color.

Night effects may be obtained, by developing the slide very dark

and then coloring the whole with blue No. 1, undiluted.

In mixing the colors, pour out one or more drops of color into a

saucer and add water by means of the pipette. Never put a brush into the bottle of color.

In conclusion, allow the author to be seech anyone without "an eye for color" to leave coloring severely alone.

Some may be like the Irishman the author met last summer at Killarney, who, when questioned as to the benefits of Home Rule if they got it, replied:

"We don't know that, but we're bound to have it."

**6**-3.

# SUGGESTIONS FOR THE "MAURINE" COMPETITION.

Editor Anthony's Bulletin:

My Dear Sir,—After sending you the contribution of Mrs. Ella Wheeler Wilcox, she dropped into my establishment one day, just as I had been asked by a fellow-photographer to make some suggestions for illustrations to Mrs. Wilcox's poem, "Maurine," so I asked her if she would not assist me in answering my correspondent, and she said, "Yes, gladly." She has a very gracious way of saying "Yes" and also an equally positive "No" on occasion!

Falling into my suggestion, she rapidly sketched off the following, which I am very glad to send to you without comment. I wish, however, to relieve Mrs. Wilcox of any assertiveness or meddling in the matter, except through my personal persuasion.

Yours very truly, GEO. G. ROCKWOOD.

Suggestions for Illustrations for "Maurine."

Page 1.—Pretty girl, simply dressed, sewing in open door; vines above.

' 31.—A quiet little lake.

" 35.—Three figures in a sailboat—see description.

" 41.—"All suddenly she nestled at my knees."

" 62.—" The growing moon watched by the myriad eyes."

" 72 and 73.—If you can find the right parties willing to pose!!

- " 37.—A cluster of ships might make a good illustration for this poem. If the New York Yacht Club could be photographed when it starts out for its cruise, for instance. (This is merely a suggestion.)
- "82.—"Standing there, her starry eyes uplifted, she did seem," etc.

" 101.—" But as the lark from beds of bloom will rise"—
(first catch your lark, and then photograph it).

" 103.—"Swift in the wake of Joy, and always near walks her sad sister, Sorrow."

(Drape two figures and photograph them in suitable attitudes. Joy ahead, smiling, with outstretched arms; Sorrow in black, with draped head falling.)

" 109.—A ship on ocean.

"O ship that sailest slowly—slowly on,—make haste."

" 113.—" I fell upon my knees beside her bed."

" 122.—"Before all Heaven and the Angel Mother of this sweet child, I claim you for my wife!" E. W. W.

#### WASHING PLATES.

DEGINNERS in photography are often inclined to be down-hearted D because they cannot make arrangements for a sink with a wellappointed tap, spray, etc., and a copious supply of water. But a sink, though a convenience, is not of such paramount importance that its absence acts as a total hindrance to further progress. Suppose a beginner wishes to develop a few plates in a bedroom, darkened in a suitable manner and for the nonce converted into a developing room. Any table with the good quality of rigidity will answer the purpose of a developing table, and it had better be covered with a movable piecethe bigger, the better-of American cloth. This material, if it be turned the glazed surface downwards, and have its dull side rubbed over with a rag and some vaseline, will last, with careful cleaning, for some time, and is efficient as a protector to the table underneath. there is any fear of spilling solutions, the edges of the fabric should be raised at the sides all round with slips of wood or other objects of similar size.

So much for the table. The operator can then arrange on it his lamp, his fixing dish, his clearing dish (if he uses it), and his developing dish. On the floor there should be, if possible, two pails of water, the one for rinsing the plates after development, and the other with a rack of some kind to hold the plates after fixing is complete.

These pails may be quite close together and may stand on a newspaper folded so as to give as many thicknesses as possible consistent with good standing room for the pails.

When developing is complete the washing pail must be emptied out and refilled, the rack being removed meanwhile. The rack with the plates therein may be twirled round and round and occasionally lifted out and dipped in smartly, and the plates will soon be found to be washed clean and free from hypo, especially if rinsed under a tap and rubbed with the fingers.

It is not desirable to encourage slovenliness in any way, but it may be here mentioned that plates treated as above, and washed under a tap after ten or twelve hours' soaking, have been found to be sufficiently washed. Once, too, some plates which had been well swilled under a bathroom tap were left in a porcelain washing trough for five days, and as an experiment were just rinsed and dried. So far as appearances go (judging from the feel and the look of the film) fixation has been complete.

It has been stated that the films of plates treated to a bath of water containing chloride of aluminium become so hardened by the process that they may be washed in hot water. Most ordinary plates may be rinsed under the hot-water tap without injury if the water be not more than 65 or 70 degrees Fahr., and this washing considerably shortens the time usually necessary for the final washing. Too great a heat causes a species of granulation in the film.—H. Massé in *Junior Photographer*.

MOTTLED negatives, when developing with hydroquinone, are the result of not rocking the dish sufficiently, or the use of too much soda.



### NEW PROCESSES IN PHOTOCHROMY.

ON the 22d of April last, a paper by Messrs. Auguste and Louis Lumière, presented by M. Lippmann, was read before the Academy of Sciences at Paris, with M. Marey in the chair. The paper was entitled, "On Photography in Natural Colors by the Indirect Method." The following is a translation of the major part of the memoir:

The indirect method of photographing in natural colors, indicated by Messrs. Cros and Ducos du Hauron, has not hitherto received truly practical application, because of the difficulties presented by two important points of the process—the triplet colors, and the obtaining and superposition of the monochromes.

We have applied ourselves to the study of these two points. For the three colors we have made use of the screens hitherto recommended, orange, green and violet; then we have prepared three series of photographic plates presenting respectively a maximum of sensitiveness for the rays which the screens permit to pass.

The printing and the superposition of the monochromes have been achieved, thanks to the employment of a photographic process with bichromated mucilages, without transfer, based upon the following observation: strong gum, soluble in the cold, bichromated, which will not give photographic images with their half-tones when it is employed alone, acquires this property upon the addition of substances insoluble under certain conditions.

If we take, for example, a solution of strong gum at 10 per cent., 5 per cent. of bichromate of ammonia, and from 5 to 10 per cent. of bromide of silver emulsified, and if we apply this preparation in a thin coating on a plate of glass, we obtain a sensitive surface which can be exposed to light under the negative. When the exposure is sufficient, the plate is washed in cold water and a slightly visible image is obtained, formed of insoluble mucilage; this image can be colored with convenient tints. The bromide of silver can then be removed by an appropriate solvent, such, for example, as hyposulphite of soda. This process gives, with the greatest facility, proofs of all colors, and with all the gradations of tone of the negative. The bromide of silver can be replaced with other insoluble precipitates.

With a process of this kind, it is easy to obtain polychrome prints by utilizing the principle of the method of Messrs. Cros and Ducos du

Hauron. We proceed to obtain in succession on the same plate the three monochrome images, red, yellow and blue, from the three corresponding negatives, taking care to isolate each image from its predecessor by an impermeable film, of collodion for example.

This method permits, by the employment of colors more or less concentrated, or by simple discoloration with water, the variation of the relative intensity of the monochromes; also the modification with care of the effect of the first three films by the addition of a fourth, or even a fifth with advantage; it renders, in addition, retouching very easy.

Messrs. Lumière Bros. sent specimen prints to the Academy, with their paper.

#### THREE-COLOR PHOTOGRAPHY.

The Paris Figaro describes the late Charles Cros, one of the two founders of the three-color process in photography, as a poet, a bizarre genius, with a curious physiognomy. Two men, one named Fournier, and the other named Guitton, pretended to have been initiated into some of his secrets, whereby they produced pictures in natural colors, which so enchanted one M. Bayer, who possesses a gallery of paintings by modern masters, that he agreed to pay them 600,000 francs to help in the industrial working of the process. The upshot was that last month Messrs. Fournier and Guitton appeared at the Police Court, and were each sentenced to eight months' imprisonment.

#### DAGUERRE'S PAPER PROCESS.

For sins of omission and commission one with any experience is prepared in popular photographic history, but I was taken by surprise on discovering a few days ago, when reading L'Institut, of February 21, 1839, page 57, that the first photographic process which Daguerre submitted to the Academy of Sciences was a paper process, and not that now known as the Daguerreotype.

On the 18th of February, 1839, M. Biot submitted to the Academy of Sciences some specimens of a paper, which he said that M. Daguerre had devised in 1826. Unglazed or but slightly glazed paper was soaked in muriatic ether, allowed to remain in air at a gentle heat until it is completely dry, and the dried paper then soaked in a solution of nitrate of silver in distilled water. Dry the paper in the dark at the normal or a slightly warmer temperature, then, if it is not to be used immediately, preserve it in a portfolio. M. Biot explained how this paper will darken under a screen of "diaphanous glass"; it then has to be well washed in water, without heat. In the camera, said Biot, it would render the sky of a black tint, and the trees white. Other liquids than muriatic ether, applied to the paper in the first instance, will modify the sensitiveness and tint of the image, so even will the particular sizing used.

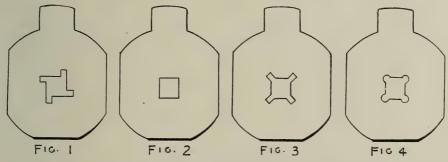
One would expect hydrochloric ether from its volatility, and its not producing a precipitate with nitrate of silver, to have little influence in this process, but it might modify the sizing of the paper. Resinous sizes are much used in France.

W. H. HARRISON.



### DIAPHRAGMS IN HALF-TONE.

A FEW years ago a tramp photo-engraver came to me for work, and the only recommendation he thought necessary to show was that he made half-tone negatives with a diaphragm shaped like Fig. 1. There being no apparent reason why a diaphragm should be made that shape, I dismissed the fellow as a crank. I was using a circular opening in the diaphragm at that time. Later the square diaphragm, Fig. 2, was found to be an improvement, and again the forms Figs. 3 and 4 were found still better, using different sizes of the same shaped stop when necessary for a single exposure. Now Mr. Max Levy has invented a



device on the principle of the iris diaphragm, by which this extension of the corners can be changed, either independently or together, with the size of the central square aperture. It would appear as if the vexed question of the shape of the diaphragm aperture in half-tone negative making was approaching settlement.

### HAND ENGRAVING ON HALF-TONE PLATES.

In a previous number of the Bulletin it was suggested that an improvement could be made in half-tone by using lines at various angles, and dots, to represent different textures on a single half-tone plate. The photo-engravers were slow to take advantage of the suggestion. Now, indications point to the wood-engraver doing by hand what the photo-engraver could do as well in the camera. In all the leading magazines and illustrated weeklies it will be found that the half-tone plates are worked over by hand until, in some cases, there is little of the half-tone effect left. This will continue to be done, and if photo-engravers have not judgment sufficient to reach these effects by photographing them,

it behooves them to secure competent wood-engravers at once to touch up all their plates, for the demand has come for brighter half-tone work, and the engraver who does not supply it will not be in the race.

## PICTURES BY TELEGRAPH.

Mr. N. S. Amstutz, of Cleveland, O., has for a number of years been endeavoring to perfect a means of telegraphing pictures. He first makes a washout gelatine film from the original picture by photography. This gelatine film is cemented to a flat disc. When this disc is revolved a needle fastened in one end of a lever traces a spiral line from the center of the picture to its outer edge. The undulations of the swelled gelatine picture causes the needle to rise or fall, thus moving the lever up and down so that electricity of varying degrees of intensity is allowed to pass over a wire to a similar instrument some distance away. In the receiving instrument the operation is reversed, the needle tracing a spiral ink line thickened in places, so that the resulting picture looks like a single line half-tone. Some of the pictures shown as having been telegraphed in that way are very successful, and are interesting as being made by the combination of photo-process and telegraphy.

## PHOTOGRAPHERS AND PHOTO-ENGRAVING.

We have always lamented that professional photographers, as a body, have given so little attention, commercially, to photo-mechanical work, and have allowed it to drift into the channels of other businesses, although the chief part of the work is purely photographic. It matters not which of the mechanical processes we may take as an example, the initial work is a suitable negative which can only be produced by a skillful photographer. The next and succeeding operations up to the time the impressions are taken in the printing press are strictly within the department of photography. Yet how comparatively few photographers have taken up any of the mechanical processes and are working them to any extent or on the scale that alien businesses are doing. This is to be regretted, because for some years past, indeed while the mechanical processes have been making such rapid strides, photography, as hitherto followed by professional photographers, has been at an exceedingly low ebb.—British Fournal of Photography.

# PHOTO-ENGRAVING ON THE NEWSPAPERS.

It is worthy of note here that no daily newspaper in New York City has, since 1884, acquired any notable increase in circulation without the use of illustrations and the necessary accompaniment of a photo-process plant. Briefly, the history of process work in the daily newspapers in New York during the last eleven years has been this: In March, 1884, the *World* began to make a feature of illustrations and to increase in great bounds in circulation. Its rivals, particularly the *Herald* and *Sun*, ridiculed the innovation as being unjournalistic. The *Sun*, finding its readers decimated through its following the fortunes of Butler for president, resorted to illustration to

save itself, and thus restored its prestige. The *Herald*, being outstripped in circulation by the *World*, with which illustration was a constantly increasing feature, reluctantly began illustrating to keep up, at least, with its illustrated rival. Then the *Tribune*, *Press*, *Advertiser*, *News*, *Morning Fournal*, *Mail and Express*, *Telegram*, in fact all the papers were compelled to adopt what was considered an innovation.

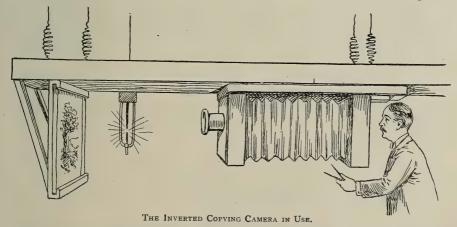
The facts are, however, that pictures (hieroglyphics) were the earliest means of recording history or communicating intelligence, and pictures will continue to be a feature of the newspapers as long as the world stands. It is predicted that the great daily papers of the future will be illustrated in half-tone, as is now done by the London *Daily Graphic*, and with color, as is used by the latest journalistic success in Paris.

Only eleven years ago the writer was connected with the then solitary daily illustrated paper in the world. To-day they number thousands, and photo-process work has become as much a factor on the newspapers as the telegraph.

#### ADVANTAGES OF AN INVERTED COPYING CAMERA.

The electric light has become indispensable in the photo-engraving business, and on the newspapers it has superseded daylight almost entirely. It has revolutionized affairs so completely that even the copying camera has been turned upside down, and to good advantage.

The illustration shows how this was done some ten years ago to



economize space, but it proves such a convenience that once an operator becomes used to it in this way, he would not change.

The camera and bed are the ordinary form, only that strips of wood are screwed on the bottom of the camera to fit in corresponding grooves in the camera bed and thus hold them together when both are inverted and still permit the camera to slide back and forth as before. The only other change required is that a strip be attached to the back of the camera for the plate-holder to rest on. The ground-glass should be hinged.

The advantages in using the camera in this way are many. It should be suspended so high that any one can walk under it without touching the bed. This gives so much more floor space, and a 10 or 14-foot camera bed ceases to be such an unwieldy obstruction in a room. Steel spiral springs are used in the supports of either rope or stout wire that connect it with the ceiling; thus vibration is obviated. In focusing the operator can stand perfectly erect behind the ground-glass instead of bending like a letter K, as he has to do with the camera bed the ordinary way. The bed ceases to be a trap for dust, and the camera is protected from it, and finally the electric lights, one on each side of the copying board, are more easily attended to.

There are other advantages and applications of this inverted camera that will be treated later.

### PROCESS NEWS AND NOTES.

THE Blanchard & Watts Engraving Company, of Boston, show a half-tone plate of silverware, hand engraved, by W. J. Dana, that exhibits delicate effects impossible by either method of engraving used alone.

A New York weekly illustrates its pages almost entirely with photographs taken from living models, posed to suit the subject to be portrayed; backgrounds and alterations are painted on the photographs, from which half-tone plates are then made.

Photo-engravers visiting New York, and those in the vicinity, can consult files of the American and foreign journals devoted to the photographic or printing trades at the office of Anthony's Photographic Bulletin.

NITRIC acid for zinc etching should "test" at least 40 degrees B, and should also be purchased from a reliable firm, or it may be adulterated with sulphuric acid, which is cheaper, but destroys the resin protection when etching.

The finest copper plates for etching are produced here in America. There is such a thing as copper too pure, that is easily injured in finishing and proving, and will not stand much of an edition on the press.

And now an English writer says: "To abuse process is idle, for it is a product of the time, and, so far as can be judged at present, it has, in the American phrase, 'come to stay.'" American artists, engravers, editors and publishers were compelled to admit this long ago.

To make a half-tone plate after understanding the method is one of the easiest things to do, but to make a first-class plate is one of the hardest. Ambitious young photo-engravers should paste that axiom in their hat.

Stephen H. Horgan.

#### THE IDEAL OF HALF-TONE PRINTING.

In setting aside one evening monthly for photo-mechanical subjects, the Council of the Royal Photographic Society has evidently made a step in the right direction, judging from the interest shown on the evening of April 17th last. On this occasion Mr. H. Snowden Ward, editor of the *Photogram*, opened a discussion on a a matter which is probably more vitally important than any other among the practical politics of the photographic craft, and of almost equal importance to the letterpress printer.

Readers will realize the extent to which half-tone work has increased by learning that photo-engraving in half-tone is considered the most important application of photography, with the single exception of portraiture, and by far the most important commercial question before half-tone workers is that of the printing of the blocks that they produce. In fact, the immediate future of half-tone work in this country depends upon the printers rather than the block-makers. Mr. Ward is responsible for the following opinions:

A few years ago, both the making and the printing of half-tone blocks in this country was very backward. We were certainly behind the French, the Germans, and the Americans. But we have been improving steadily, and now we may fairly claim the second place, not a very good second, it is true, but still second only to America; though there are some who claim that the Germans and the French still beat us. By common consent, we stand second to the Americans, our average a long way below their average, and this is a position with which we cannot remain satisfied. It therefore becomes an important question: What can we do to improve our general status?

The block-makers generally seem to be of opinion that the only effective improvement, for the moment, must be through the education of the printers; and in this opinion I believe they are supported by the paper-makers, the printing-machine-makers, and others who have given attention to the subject. They do not claim that no bad blocks are made, or that the average of British half-tone is equal to the American average, but the claims may be stated thus: (1) That the majority of British printers fail to produce even fairly creditable results from the blocks supplied to them; (2) that from better and finer blocks the same printers would produce even worse results.

I am trying to state the general opinion of the block-makers, rather than my own idea on the subject, and for the present it is not necessary to consider how much of the blame thus falling on the printer is really due to the great British public and its demand for everything cheap. I do not say that we have no good half-tone printers in Britain. Fortunately we have a few who have spent much time and labor upon this problem, and achieved a certain measure of success. But outside these few our work cannot compare with the every day work of America and even the few in their regular work cannot compare with the regular work of a score of the best American printers.

The half-tone firm that has done more than any other within the last two years to teach the British public what really fine half-tone ought to be, realized from the first how much depended on the printer, and therefore engaged the best man they could find to print their proofs and specimen sheets. The Swan Electric Engraving Company undoubtedly make the finest half-tone prints that we see in this country. This firm then says to the printer: "These results are obtained from the blocks we supply to you; if you cannot equal them, blame yourself, or your conditions, and not our blocks." And this is, practically, what many another block-maker says to the printers. A proof is pulled on an old hand platen press by a lad whose only witchcraft is to get an even inking and an even pressure; and the printer-man after a couple of hours spent in overlaying and fancy touches produces something that is not equal to the first proof. This is a serious and most important fact—that from many a block the first hand press proof is the best that is ever obtained. I think it shows, among other things, that the elaborate making ready is often, if not generally, a mistake. The further fact that within the last year or two, half-tone printing

on bad paper has improved more than half-tone printing on good paper, and that some of the penny religious weeklies are giving very creditable results from fine half-tone blocks seems to point in the same direction.

When we come to the question of what must be done to improve our half-tone work, we must consider the great variety of influences that make or mar the perfect result; and here, although I have been a printer by business for many years, and am still pretty well in touch with the craft, I am open to correction on many points, for the world moves fast nowadays, and the fine printer is a great specialist.

An important point is the paper we can use, and here, until recently, the British printer has had some cause for complaint. The best papers for half-tone work were hardly upon the English market, and were dear; but latterly, and especially since the Werner Company popularized the 6-penny half-tone albums, the paper-makers have given great attention to half-tone requirements. Paper in every way suitable for the work is comparatively cheap, and though in some of the very finest grades we may not equal the Americans, I think our best paper is well ahead of too much of the work that is put upon it.

The printing machines, too, are of the greatest importance, and I am sorry to say that we are importing more and more of our machinery for this work from America. It may be that the Hoe machinery is ahead of the finest that Englishmen can build, though there are English machine-makers who will contest that position; but the point of greatest importance to the half-tone trade lies among the every-day users of good English jobbing machines, and there the block-makers generally claim, and the machine-makers decidedly do, that the average printer is far from having exhausted the capacities of home-built machines, and that the machines he is regularly using are capable of infinitely better work than he turns out.

The electrotypers are another difficulty, for the finest American work is done from electrotype plates of both blocks and type, and there are very few British printing offices fitted for the production of such plates. To make them in perfection expensive planing and leveling machinery is involved, and altogether, a modern electrotyping-room is an extensive and very expensive adjunct to a printing office. I believe we have no trade electrotyper in this country who is prepared to supply such electro plates, for instance, as are made in the foundry of George Newnes, Ltd., for the printing of the *Strand Magazine*. But there are many jobs which even in an American office are not printed from electros, of which the American printer would produce a far better result than his English brother. And there are too many British printers who, even if they do get a straight electro job, lamentably fail to produce the best result, and usually rapidly ruin the electro.

The difference between the ordinary British method of printing and that which is adopted in all good American houses, and to a certain extent by a few British firms, is a fundamental one—a difference of principle. The British printer does not absolutely insist upon a dead level surface of electro, or of type and block, and does not work his cylinder hard on to the printing surface. If he did, unless that surface was absolutely level, he would bruise and batter such type or blocks as stood above the rest of the form, and rapidly ruin his work. Instead of this, he wraps his impression cylinder with an appreciable thickness of paper or thin card packing, which has a certain amount of "give" to the projecting parts, and evens up his pressure by an elaborate system of overlay. In this he usually exercises the patience of Job, and often the skill of an artist; but overlaying is like retouching—very seductive, and very apt to defeat its own end.

The other school insists on an adjustment of cylinder to bed that is only possible with perfectly built machines, and those that have been carefully run and adjusted from the time when they were new. In this method, if electrotype plates with absolutely dead true surfaces are not used, the printer will give great attention to levelling his surface by underlaying, Of course, if he is working as some printing offices do, with types of various age—and therefore of various heights—in one job, he must give up any hope of fine results from his printing, unless the varying types are in solid blocks of a sort. The printer will adjust his cylinder with the greatest possible care—so closely, in fact, that it needs the thickness of the paper to be printed upon to

complete the weight of the impression. With such adjustment, very little overlaying is necessary if the blocks are level and good; and with proper inking, each block will give, until it is worn out, impressions similar to the makers' proofs. This method of working not only saves much time—climinating almost all of the making ready—but it also greatly increases the life of the blocks and type, for it preyents the weight of the cylinder coming on to them. The cylinder works in bushes, adjustable by means of serews, and too many British printers get their impression by lowering the lower bushes until the cylinder normally rests very slightly below the level of the top of the type. In this case the printing surface has to bear the weight of the cylinder, which probably accounts for the fact that identical electrotype plates, running two parts of the issue of the same magazine, will run three or four times as long in one machine room as in another. The lower bushes should bear the weight of the cylinder clear of the type, while the upper bushes, preventing the cylinder from rising, give a dead impression far greater than can be given by the cylinder's weight.

The ink that is used must be fine and very stiff, in order to give a dense color with a very small quantity that will not easily clog the shallowest blocks. To use such an ink the rolling power must be ample, and the rollers hard and true.

Around the room and on the table were examples of fine American and English printing. The American examples were magazines, etc., that came in the ordinary way. The English examples were contributed by Raithby, Lawrence & Company, Ltd.; Unwin Brothers, Ltd.; Hazell, Watson & Viney, Ltd.; the Swan Electric Engraving Company. On the walls was a very fine collection of the work of the National Chemigraph Company of St. Louis and elsewhere.—*The British Printer*.

# OUR ILLUSTRATIONS.

THE post-office authorities have reconsidered their ruling regarding the issuance of photographs with second-class matter, and permit us to send out with this, and probably our next issue, an actual photograph. We take great pleasure in presenting our readers with a study by Morrison, of Chicago, printed on "Aristo Platino" paper. We have in our April issue given the details of the method employed in toning this paper, and would say that these prints are toned in gold with the afterbath of platinum, and should be perfectly permanent.

Of the half-tones, one is from a print kindly sent to us for the purpose by Mr. H. L. Chamberlain, and is indicative of careful work and close attention to detail. The negative is made with a 5 x 8 Anthony outfit, and the print is on "Aristo" paper.

In this connection we would invite our readers to send in any prints that they think are sufficiently good and of sufficient interest to be of use to our readers in general. We will have them reproduced with the greatest care, and, of course, properly credit the same.

The other illustrations are from two of Mr. Elmendorf's negatives, and are taken from his book on "Lantern Slides—How to Make and Color Them," which has recently been issued by our publishers.

Mr. A. H. Wall, of Stratford-on-Avon, one of the first photographic journalists, has just started a Shakespearean 6-penny monthly magazine, for which his position as librarian of the Shakespearean Memorial Library for seven years has especially fitted him. Photographers will know him by his frequent recent contributions to photographic literature, and those of the older days will remember him as an editor for some years of the *Illustrated Photographer* published in London, Eng.



MINNEAPOLIS CAMERA CLUB.—At the annual meeting of this Club, the following officers were elected: President, A. L. Eidemiller; Vice-President, W. H. McMullen; Treasurer, A. S. Williams; Secretary, C. J. Hibbard.

Russian Photographic Society.—During February and March, 1896, a photographic exhibition will be held under the auspices of this Society in Moscow. The exhibition will be presided over by H. I. H. the Grand Duke Sergius, Governor-General of Moscow. All amateur and professional photographers are invited to take part. Gold, silver and bronze medals and diplomas will be awarded by a jury of experts, and, in addition, every exhibitor will receive a silver souvenir. All enquiries should be addressed to the President of the Russian Photographic Society, Mr. Vladimir Karlowitch Wulfert, Serebrianny pereulok, No. 9, Moscow, Russia.

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Boston Camera Club.—This Chib, representing a gentlemen of high standing in matters pertaining to aerial navigation, offers two prizes for instantaneous photographs of large soaring birds. The first prize of \$100 is offered for the best instantaneous photograph of a large bird in the act of soaring. An additional prize of \$50 is offered for the greatest number of instantaneous photographs, offered by one photographer, of birds in the act of soaring. By "soaring" is meant the attitude of the bird in the air when no wing motion is apparent. The figure of the bird should be at least ½ an inch long on the print. The offer remains open until October 1, 1896. For further details apply to Mr. Samuel Cabot, care Boston Camera Club, 50 Bromfield Street, Boston, Mass., U. S. A.

Photographic Society of Philadelphia.—The following officers were elected: President, Joseph H. Burroughs; Vice-Presidents, Charles R. Pancoast and Robert S. Redfield; Treasurer, George Vaux, Jr.; Secretary, Edmund Stirling.

The Amateur Photographers of Mount Vernon have formed a club "for the advancement of the science and art of photography," said club to be known as the "Camera Club of Mount Vernon." Meetings are held once a month, and papers upon topics of interest are read and discussed. The membership numbers about thirty-five, and is increasing rapidly. The meetings are held temporarily at the studio of W. F. Sleight, on Fourth Avenue, but in a short time the Club will have a home of its own, with darkroom and all necessary apparatus for the use of its members. The following are the officers: President, Mr. B. H. Carmer; Vice-President, Mr. Edgar Henriques; Treasurer, Mr. J. A. Young; Secretary, Miss Mary E. Jennings; Librarian, Mr. A. J. Cunningham.

SEATTLE CAMERA CLUB has opened new rooms, including meeting hall, ladies' and gentlemen's parlors, laboratory, work and dark rooms. The secretary, Mr. Emil de Neuf, will be pleased to hear from eastern clubs with a view of organizing a system of exchange.

THE AKRON CAMERA CLUB will present the city hospital with a collection of views.

LIBRARY OF THE UNIVERSITY OF ILLINOIS



NEGATIVE BY W. J. ROOT.

PRINTED ON'
THE AMERICAN ARISTOTYPE COMPANY'S
"ARISTO-PLATINO."

# ANTHONY'S

# ulletin.

LL.D.

No. 7.

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NEGATIVE BY W. J. F

# ANTHONY'S

# Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

VOL. XXVI.

JULY, 1895.

No. 7.

### HAND-CAMERA EXPOSURES.

THE hand camerist is here to stay, and indeed he has so far outstripped his tripod brother numerically that the latter is as scarce as the ferrotypist. The hand camera is an instrument capable of very wide application. It gives to the photographer a power that a few

years ago would have been considered miraculous. Abuses of this power have been few, and, indeed, photographers generally view with disapprobation the too free use of the hand camera. The question has been asked. Where will the development of the camera stop? First, daguerreotypes, then wet plates and slow dry plates, and now plates and shutters working at phenomenal speeds. There seems to be no point where it can be said the end is reached. The value of extremely rapid exposures for ordinary work may be questioned, yet, for scientific work, high speeds are necessary, and the wonderful advances in apparatus and plate making seem to point to still further developments in the near future.



From Aristo-Platino Print by Chickering.

At present the climax for amateur work seems to be the combined hand and tripod camera, adapted for the use of plates or films, or both. The many ingenious contrivances, devised to secure the utmost simplicity and exactitude, have so far relieved the photographer of any attention to working details, that he may devote the necessary attention to

the vital questions of exposure and selection of subject. Unfortunately, most hand-camera workers regard their instrument as capable of anything and everything, and shoot away with utter disregard of the most necessary precautions. Very few of them have any idea of the speed of plate and shutter, and of the size of the diaphragm employed. Few of the ordinary hand cameras have the ratio of aperture to focal length marked on the diaphragms, and the possessors of those that have oftentimes regard them as some private marks of the manufacturer. exposure meters, to which we have many times called attention, should be universally adopted. They are easily manipulated, and are compact and portable. Wynne's exposure meter is of the shape of a small watch, and in one movement the correct exposure may be found. And in this one movement, four factors, all of which are usually neglected by the amateur, are considered, namely, the intensity of the light which illuminates the subject, the diaphragm or stop employed, the character of the subject and the sensitiveness of the plate used. Remember that unless a plate receives sufficient exposure a good negative cannot be obtained. No developer can create, that is, get out of a plate an image which is not there.

By the aid of the exposure meter it is, of course, possible to get a batch of plates or films exposed so nearly correctly that development is a comparatively simple operation. But the product of the ordinary hand camerist is usually a lot of exposed plates, some over-timed, others (most) under-timed, and a very few timed correctly. If the same plates, diaphragm and shutter speed are employed from 10 A.M. until 6 P.M., identical effects on the sensitive surface cannot be looked for. Time and again have we seen the amateur urged to carry along an exposure notebook and make a record of his work. In tripod days this was often done, but to-day the photographer who conscientiously records each exposure is a rarity. And so he will be, and, perhaps should be. It is often impossible to make notes, and, if the exposures are made with the aid of a meter, it is usually unnecessary.

Given, however, a batch of plates or films, exposed with or without the assistance of an exposure meter, how shall the beginner proceed? The darkroom is probably an improvised one, the facilities of the poorest, the temperature high, and the photographer in a hurry-all militating against good results. The darkroom should be as roomy as possible; everything should be ready before white light is excluded; a yard or two of thin rubber cloth should be spread over the table used; ice water should be handy, and there should be no hurrying. Confusion of any kind, anywhere, leads to failure. If films have been used, it will be found best to take a piece of glass about the size of the film and fasten this latter to it by the aid of two rubber bands, one over each end. Films thus treated may be developed similarly to plates. A preliminary soaking of the plate in water is often recommended. There seems to be no good reason for this, and it has been stated by authorities that many cases of "pinholes" have been traced to it. If a sufficient quantity of developer is used, the plate can be quickly covered and lines and other markings easily avoided.

With such exposures as we have selected, tentative development is the only method that will ensure good results. To place a dozen different exposures in one solution means obtaining a dozen widely differing negatives. Every beginner will doubtless try the new developers, and may succeed in getting many handsome-looking negatives. A very handsome negative nearly always yields prints having too much Those developers for which it is claimed that the negative "jumps out in a flash" should be let alone. Flashes are good in their place, but for a good negative, careful watching and handling are necessary during the whole process of development. Pyrogallol, with sulphite and carbonate of soda, gives negatives that cannot be excelled, and the action of the developer can be so easily changed that increased detail or density can be obtained with great facility. Many formulas might be given, but all are useless. True, all will develop, but the formula of the developer necessary for a certain exposure cannot be set down beforehand. Having the plate developing, such additions must be made to the developer to bring out all there is in it. Of course, when exposures have been made with the aid of the exposure meter, that is, when the sensitive film has in all instances been acted on equally by the light, a formula, once proved satisfactory, may be relied on as the proper thing; but when, as is usual, the exposure has been a matter of guess-work, a different formula is necessary for each plate, if the best possible result is to be obtained.

## THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

THE convention to be held next month will probably be the last annual meeting of the Photographers' Association of America. As

set forth in our May issue, the Executive Committee of the Photographers' Association of America have, with commendable foresight, drafted a new constitution and set of by-laws, and next month opportunity for discussion on the question of the existence of the Photographers' Association of America as it now is, or of the substitution of a triennial gathering of the State organizations, will be afforded.

It is to be hoped that the gathering will be a representative one, and that every professional photographer will endeavor to be in attendance.

The Photographers' Association of America has done much for the photographer and for photography. Its work is now being largely done by



From Aristo-Platino Print by Chickering.

the State organizations, but a general meeting every three years seems to be very desirable. We hope the new constitution will be adopted.

Detroit is peculiarly fitted for the convention. The convention hall is admirably adapted for the purpose, and the city attractions are many. Manufacturers and dealers are making special efforts to make the exhibition one of real value, and the many entries for the various awards indicate that the exhibition of work will be unusually fine. The photographer who has his wits about him will pick up many points at Detroit. New York photographers who intend going to Detroit will please communicate with the editor of the Bulletin. If sufficient interest is evinced, low rates may be obtained, and no little saving effected.

With regard to the poem "Maurine," for which the Special Prize, an elaborate silver cup, is to be awarded, we would advise our readers to secure the book "Maurine and other Poems," by Ella Wheeler Wilcox, published by W. B. Conkey Company, Chicago, Ill.



THE fifth annual convention of the Photographers' Association of Ohio will be held in the City Hall, Columbus, O., July 23d to 25th, inclusive. Our Ohio friends lead in the matter of profitable gatherings, and this year's meeting promises to be a great success.

DIFFERENCES in the densities of negatives are in a great many instances due to variations in the light used in the darkroom. Some time ago we pointed out how, without any inconvenience, fairly uniform negatives might be produced. First, use some form of artificial light, avoiding daylight. Second, having a uniform artificial light, construct an arrangement which will permit of the examination of negatives at a constant distance from the light. A wire frame attached to the lamp will suffice, the negatives being always placed against this for examination.

The finest negatives are produced with pyro developer. Other developing agents are lauded to the skies, but the men who are turning out uniformly good work are pyro-users. Hydroquinone, eikonogen, metol, amidol and the others are fairly good for some things, but in pyro the virtues of all will be found, with none of their faults. It may stain the hands a little, but the photographer prefers good negatives and stained hands to the usual run of work turned out by the aid of some of these new developing agents.

We have received many prints lately from our readers, and note that some of them are weak and flat with yellowish-red tones. Such prints are practically worthless. If those who are getting such results will print deeper, and then tone further, the trouble will be obviated.

The directions for coloring lantern slides, which formed part of Professor Elmendorf's article in our June issue, must be understood as applying to dry plates only. The colors alluded to are not adapted to wet-plate work.



Effect with Strauss Marl.

Work has been commenced on the eighth volume of the "The International Annual." The editor will be pleased to receive contributions in the way of practical articles or interesting photographs. Some few copies of Volume VII are for sale. This issue contains two actual photographs, nineteen full-page illustrations, and one hundred and thirty practical articles on topical subjects.

When making up your outfit for a summer trip, do not omit to include an exposure meter. Of the many forms on the market, perhaps the handiest, most reliable and easiest to manipulate is Wynne's. This is a little instrument in the form of a watch, and in one movement only the correct exposure can be accurately ascertained.

For stopping out pin holes in negatives a mixture of carmine, ultra marine and sepia in gum water is recommended, the proportions of the colors being varied so as to approach the density of the negative at the parts worked on. The usual way is to block out the hole with opaque and then spot the print.

R. Ed. Liesegang, writing on the relief seen on negatives, remarks: "I have frequently called attention to the relief shown on bromide of silver gelatine negatives, and have declared that the finely divided metallic silver was capable of tanning the gelatine. My investigations of the color of silver images have led me to another and more probable explanation. The relief is undoubtedly caused by the tanning of the gelatine at the exposed parts; the black portions of the wet negative will therefore be deeper than the swelled light parts. This appearance shows strongest when the negative has been developed with pyro, and particularly if only pyro and an alkali and no sulphite of soda were used. As negatives, when developed with pyro, have a strong yellowbrown coloration, it is very probable that the oxidation products of the developer which caused this coloration, do the tanning of the gelatine at the blackened parts. This idea is supported by the observation that the relief does not disappear if the silver is removed with bromide of copper and hyposulphite of soda. During the drying of the negative the relief will be reversed—that is, the blackened parts will be higher than the light parts. The cause of this is the presence of silver in the exposed parts, this occupying, of course, a certain space. This has nothing whatever to do with the tanning, because the relief is seen also in collodion negatives, and, indeed, is particularly strong in such cases."

Mr. W. N. Jennings, of Philadelphia, at the close of his lecture on photographing lightning remarked: "Now that the camera has revealed such a wonderful variety of lightning discharges which always appear the same to the eye as to the lens, it behooves the artist who would truthfully represent a thunder storm to study Nature, and not the work of a brother artist, and never again should an awkward, angular zigzag be made to stand for the graceful autograph of Jove."

Dr. Janeway, speaking of the electric light before the Society of Amateur Photographers, said that this light is the only artificial light which can be compared with that of the sun. Measured by its actinic properties simply, it is not so very far behind that great luminary, its spectrum being longer towards the violet.

In the *British Fournal of Photography* the editor recommends for rough focusing and composition of the picture, a screen, ground to the margins, with a portion left polished in the center against which a microscopic focusing glass may be placed. The form of focusing glass recommended is that known as the Ramsden eyepiece. The best way to make such a screen is to varnish a small space in the center of the glass plate

and dull the surface by the fumes of hydrofluoric acid, afterwards removing the varnish by alcohol when the etching has been completed. The following directions are given for this dulling of the surface: "Obtain a sheet of polished glass that is quite flat, and, having made it scrupulously clean, hold its best polished side a few inches over a flat gutta-percha or vulcanite tray, on the bottom of which has been sprinkled a little crushed fluor spar, which, in turn, is sprinkled with some sulphuric acid. This gives off fumes which will immediately act upon the glass exposed to them. Judgment is required as to the extent the corrosion is allowed to proceed. This gives a dull surface, of which the grain is finer than that of any glass ground by means of emery, and on which a sharp focus may be obtained with the aid of a high-power Ramsden eyepiece."

A. Frey, of Paris, describes a printing process with eikonogen. Anilin or toluidin are treated with sulphuric or nitric acid, and the product, which is almost colorless, is dissolved in warm water. A mixture of this liquid with eikonogen spread on albumen paper becomes colored on exposure to light.

Cherry or blackberry juice mixed with hot eikonogen developer loses its color. When paper coated with this solution is exposed to light, the color is restored to the exposed parts.

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WITH great regret we record the death of Mr. A. M. Collins, the founder of A. M. Collins Manufacturing Company of Philadelphia, the largest photographic card stock concern in this country.

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We note with sorrow the death of Mr. J. B. Sayce at New Ferry, Cheshire, England. With Mr. Bolton, once editor of the *British Journal of Photography*, he introduced the collodio-bromide process.

Chapman Jones recommends for the restoring of discolored or apparently faded platinum prints, soaking them in hydrochloric acid mixed with about ten times its bulk of water, to which has been added a few drops of sodium hypochlorite solution, enough to give a distinct odor of chlorine, and in daylight to show the color of chlorine in the liquid. After five or ten minutes the print should be washed and dried as usual.

Long or medium focus lenses generally give the best results in portraiture; say 6 inches for quarter plate and 9 inches for half plate.

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Yellow patches on prints which refuse to tone are caused by that part having been touched by perspiring fingers or contaminated with hypo.

All communications for the August issue must reach us on or before July 22d.

# CARBON PRINTING.-THE "CONTINUATING ACTION OF LIGHT."

DASSING reference was made in the last article to an important point in connection with carbon printing, namely, what has been termed the "Continuating Action of Light." This subject, if not understood, may entail upon the novice some trouble as well as a waste of material. On the other hand, when its conditions are fully realized, instead of causing trouble, it is really a very valuable power at command, inasmuch as it enables us to secure, within a given period, several times as many prints as could otherwise be obtained.

In the earliest days of the carbon process it was found, even by the very first workers, that if pictures were kept for some time after they were printed, they turned out darker than they would have done had they been developed at once. It was also noticed that this darkening action was by no means regular. Prints at times would darken as

much in a few hours as they would at others in a day or more. These vagaries remained without any real explanation till 1877, when the late Mr. J. R. Sawyer brought the subject before the Photographic Society of Great Britain. In a valuable paper he read, and in the results he showed, Mr. Sawyer proved conclusively that prints which, though secured from the light, were freely exposed to the air, darkened much more rapidly than did corresponding ones which were preserved from it. The protected ones, at the end of five or six days had gained no more than the unprotected ones had done in half the time. The examples proved, as well, that the action in the former had been more regular from day to day than it



From Aristo-Platino Print by Chickering.

had been in the latter. In those there were considerable discrepancies some days the prints had darkened much more than on others.

A couple of years later I determined to investigate the matter further, and try to find a solution of the problem, if possible. I had long noticed that the darkening action proceeded far more rapidly in warm and damp weather than it did when the atmosphere was cool and dry—then the action appeared to me to be almost nil. The experiments made at the time need not be described in detail; it will be sufficient to explain that the prints were, after exposure, suspended in a warm chamber (80 to 85 degrees), the atmosphere of which was kept saturated with moisture, for various times between exposure and development. It was found that prints which had received but half the normal exposure were, after the lapse of one hour, considerably over-

printed. Others were then exposed for a quarter of the proper time, that is, supposing they had been developed in the ordinary course. They were then developed at half-hour intervals, and it was found that the one that had been kept for an hour was of the right depth, while all the others were too dark. In the longest kept one of this series the action had gone right through the tissue, and the paper could not be stripped from the shadows, though the gelatine was soluble enough on the lights. Another experiment was with the exposure reduced to one-sixth, and here it was found that, after an hour's keeping, the prints were nearly dark enough, and after an hour and a half a little too dark, the others, of course, all being much over-printed. It may here be mentioned that one-sixth appeared to be about the minimum exposure that could be given with a negative with strong contrasts, for in even the darkest prints of this series there were some few points that were quite white, proving that the initial lighting had not been sufficient to penetrate the densest parts of the negative to set up the action.

Finding that the rapid continuating action was due to moisture, accelerated by heat, experiments were next made to see how far its absence would retard it. Prints were exposed for half the normal time, then thoroughly dried, and afterwards sealed up air-tight in a metal case. The prints were developed at intervals up to six months, and at the end of that period they had not got a bit darker than they were when they were taken from the negatives. Neither had the tissue lost

any of its original solubility.

The above experiments show that if the prints are not to be developed till some time after they are printed, allowance should be made for that in the exposure, as it will then save time in the development, through their turning out over-printed. Also, that the printing should not be carried so far in warm and humid weather as it may be when it is cool and dry. Indeed, in dry and frosty weather the printing may be carried to the full depth, and yet the prints be kept for a day or more without their getting materially darker, assuming, of course, they are not exposed to a damp atmosphere in the meantime.

The value of the continuating action is great, for when a large number of prints are wanted from a particular negative in a given time, a quarter or a fifth of the full exposure will suffice if advantage be taken of it. And when the conditions governing the action are understood by the worker, the matter becomes one of certainty. The humidity of the atmosphere and its temperature are all that have to be considered. Although it is possible with a fifth or less of the proper exposure to obtain, in an hour or so, the same result as if the tissue had been fully printed, it is not recommended in practice to proceed quite so violently, but to allow a longer time under more normal conditions than those detailed in the experiments.

Some of my older readers will doubtless remember that some years ago there was a great deal of controversy in some of the foreign journals, particularly in the French, about this action—some even denying in toto that it had any existence whatever. Now, knowing upon what it depends, that scepticism is easily accounted for—the dry air of France is very different from the usually moist atmosphere of Great

Britain.—E. W. FOXLEE, in Autotype Notes.

## OLD-TIME NEGATIVE PROCESSES.\*

A<sup>T</sup> a meeting of the Photographic Society of Philadelphia, January 9, 1895, your attention was called to the subject of "Old-Time Negatives and How They Were Made," but owing to want of time only the wet-plate process was described, leaving the consideration of dry-plate negatives for another evening.

In the early days of the wet collodion process, before reliable dry plates came into use, it was necessary to carry a portable darkroom into the field and finish the work on the spot, which required the use of a quantity of chemicals and the treatment described in the previous lecture.

Thirty-five years ago dry plates were prepared by the wet collodion process or by the use of albumen. In either case the collodion or albumen

was used for holding the sensitizing salts. The manipulation required for the preparation of dry collodion plates was practically the same for all processes. The first part of the process, viz., the sensitizing of the collodion in the nitrate of silver bath, and afterwards getting rid of the free silver solution on the plate by repeated washings, first in distilled and afterwards in ordinary water, being common to all, a preservative, as it was called, being afterwards applied, its object being to fill the pores of the wet collodion film with a suitable substance, which, being afterwards washed out from the dried film previous to development, left the film somewhat in the same condition as the original wet film, and



From Aristo-Platino Print by Chickering.

enabling the developer to act upon it in a similar manner. It was this organifier or preservative which gave the name to the particular process used, and hence the term tannin, malt, coffee, resin, beer, gallic acid, milk, albumen, tea, as applied, simply indicated that one of these preservatives had been used in the preparation of the plate. It is not to be supposed that the result in the finished negative was the same, whatever preservative was selected. On the contrary, each one gave marked qualities peculiar to itself, and consequently each one had its adherents as being *the* process, provoking just as much discussion and rivalry as exists in the use of the various commercial plates of to-day.

In the albumen process "pure and simple," the treatment was practically the same, the iodizing or sensitizing salts being held in solution in the albumen instead of collodion, the plate being coated with the iodized albumen, which required very delicate manipulation, as the plate had first to be accurately leveled and the albumen applied by

pouring on a small "pool" in the center of the plate, guiding it with a glass rod to the edge, draining off the surplus, and, when set, drying afterwards by gentle heat. The plate was then made sensitive in the nitrate of silver bath, and afterwards treated as the collodion dry plate, with this exception, that gallic acid was almost exclusively used as a preservative. There was so much care required in the preparation of these plates, owing to the "tacky" nature of the albumen—dust or any floating particles collecting on the surface making the resulting negative anything but satisfactory—that a modification of it was introdued by Colonel Taupenot, in which, instead of flowing the albumen on the plate as before described, the plate was first coated with collodion, and, after sensitizing and washing, was covered with the albumen, as I will hereafter describe. And in this case the whole manipulation was rendered very much less difficult, there being little danger from defects caused by dust, etc., as these substances would sink through the albumen and find a resting place in the porous collodion film below. The application of the iodized albumen was much more readily accomplished, as the collodion substratum or film being moist from the washing, the albumen could be flowed over the plate with great ease. The sensitizing of the collodion film previous to the application of albumen was not absolutely necessary. A plate coated with plain collodion and simply washed until the ether lines disappeared, and then coated with the albumen, would answer, as far as facility in coating was concerned, equally as well as Colonel Taupenot's process, but it is beyond question that the iodide of silver in the collodion, formed by the nitrate bath, not only helped to reinforce the darks of the finished negative (the developer working through and acting on the iodide), but the opacity and yellow color of the film prevented anything like back reflections from the plate or blurring in the high lights. And to-day these plates will hold their own as far as maintaining the detail and soft tones of the high lights under the most prolonged exposure against any "backed" or doublecoated plate of the present time.

The next variation in the preparation of dry plates was the introduction by Messrs. Sayce and Bolton, of the Liverpool Photographic Society, of the collodio-bromide plate. In this process, instead of forming the sensitive iodide or bromide of silver by immersion of the salted collodion in a nitrate of silver solution, as in the processes before described, this intermediate step was omitted and the nitrate of silver in due proportion was added (in alcohol solution) to the collodion containing the requisite quantity of bromide and an emulsion formed (a principle similar to the present method of making gelatine dry plates), and the plates coated with this, afterwards washed to remove free salts. As there was usually an excess of bromide, the plate was finally coated with one of the before-mentioned preservatives and dried. These plates being composed entirely of bromide of silver, required "backing" to prevent halation. They were fairly sensitive for those days, and established and maintained a good reputation for many years.

About the year 1876 washed collodion emulsion came into use. It was essentially the old "collodio-bromide," with the modification that

the emulsion, instead of having the free salts extracted by washing, after coating the plate and a preservative applied, the emulsion was washed by proper methods, and the preservative or organifier added as well. It was then only necessary to coat the plate with this emulsion, and when dry it was ready for exposure, no treatment after coating being necessary. This reduced the labor of preparing plates to a minimum, and excellent results were obtained in many cases. However, it was liable to develop "spots." Their origin being difficult to trace and a remedy hard to find, some enterprising experimenters prepared their own silver emulsion, but a large number purchased their supply from stock dealers. While upon the subject of washed emulsion, credit should be given to two of the members of this Society, Mr. Lewis T. Young and Mr. D. A. Partridge, who were able to place in the hands of photographers a most reliable article.

For many years the rivalry among these old processes continued, and many a hard battle was fought to demonstrate the superiority of some pet process until the advent of the commercial gelatine plate caused a cessation of hostilities. A truce was declared, the old dipping baths, collodion bottles, drying racks, etc., were placed on the retired list, and the war now wages between rival gelatine plates and what

constitutes the best method of developing them.

To give some idea of the dry-plate processes in use about 1860-61-

62-63-64-65, mention will be made of a few of them.

Malt.—Mix 7 ounces well-bruised malt in 24 ounces hot water, keeping the temperature from 155 degrees to 158 degrees; place the pot containing the infusion before a moderate fire for half an hour, allowing the temperature to fall to 138 degrees, and the solution has acquired a sweetish taste; remove some distance from the fire and cool slowly for two or three hours, stirring frequently; filter. The solution should be quite fluid, and of the color of pale sherry. Use a fluid collodion. Excite in a bath of 35 grains nitrate of silver to each ounce of water. Neutral. Wash off all the free silver under a tap, until the greasy appearance disappears; drain for a few moments on a pad of thick blotting paper. Before the film begins to dry, pour over it the malt solution; wipe the back of the plate and dry by artificial heat.

To sensitize, place the exposed plate in a dish of water for a few minutes, then dip in a bath of nitrate of silver 25 grains; water, 1 ounce. Develop with iron or pyro and ammonia.

Milk.—Take 20 grains of condensed milk to each ounce of water; dissolve, filter, and pour over the collodionized plate. Same developer as malt.

Tannin.—Use an old sample of red collodion, nitrate of silver bath, 45 grains silver to each ounce water, acidified by 3 drops of glacial acetic acid. When the plate is sensitized, wash in a number of dipping baths containing distilled water. If little washing is done, the plates will be more sensitive, but will not keep. Then drop in a bath of tannin 15 grains, water 1 ounce, which has been filtered carefully. Dry by artificial heat. Developer, pyro, citric acid and silver.

Coffee.—To make preservative: Take 1 teaspoonful of ground coffee, add to it  $\frac{1}{2}$  pint boiling water; allow the mixture to stand for ten minutes, filter, and use cold. A little sugar was often used in the solution with good results.

Tanno-Gallic Preservative.—

Tannin	to orains
Gum arabic	6
White sugar	1 "
Water	I ounce.

Mix together, and add 1 drachm of a 24-grain solution of gallic acid dissolved in alcohol.

Albumen.—Red collodion, acid nitrate bath 40 grains strong; sensitized. Wash in water until oily lines disappear. Preservative:

Albumen (Ackland's)	I ounce.
Ammonia	3 drops.
Water	3 ounces.

Filter and pour over the sensitive plate; drain, and apply a second time. After the second application, wash the plate under a tap. Then flow with—

Nitrate of silver. Glacial acetic acid.	15 drops.
Water	ı ounce.

Let this solution soak into the film for a few minutes, then wash off and dry. Exposure, four times wet.

These plates will keep for two weeks. If, before drying, the plates are flowed with a 3-grain solution of gallic acid to each ounce of water, they will remain in good condition for years.

Develop with pyro and carbonate of ammonia; strengthen with pyro and silver.

Taupenot Albumen Process.—Albumenize the glass, old red collodion, sensitize in silver bath 45 grains to each ounce of water; wash thoroughly in water and place in a 10-grain solution of salt and water. Wash in water, drain and flow with iodized albumen, made as follows:

Whites of ten eggs, concentrated ammonia,  $\frac{1}{2}$  drachm; dissolve 60 grains iodide of ammonia, 10 grains bromide of ammonia, in 2 ounces water; add to the albumen, and beat with a wooden spoon to a stiff froth; let it settle for one night, and pour off the albumen for use. Let the first application run off the plate, flow again, drain and dry. Plates in this condition are insensitive to light, and will keep any length of time. Up to this point all the operations can be conducted in white light. To sensitize:

Nitrate of cilyon	
Nitrate of silver	45 grains.
Water	I ounce.

To each ounce of solution add ½ dram of glacial acetic acid. Dip the prepared plate in this bath for not more than one minute. Wash well in water, and dip in a 10-grain solution bromide of potassium; wash under the tap for one-half a minute, drain, and pour over the plate a 3-grain solution gallic acid to each ounce of water. Dry without much heat.

Development.—Wet the plate with water; flow with a 3-grain solution of pyro to each ounce of water until the shadows appear, then add a drop or two of citric acid and silver solution, which will give the proper density. These plates can also be developed with alkaline pyro, and density given, after detail is out, with acid silver solution and pyro.

Fix in Hypo.—In this process the albumen being coagulated in the nitrate bath, the film becomes very hard, and if carefully handled, no

varnish is necessary.

The Gum Gallic Process was probably the most rapid of the dry collodion bath plates, especially if the collodion was highly bromized and a strong nitrate bath used. In this case and when freshly made, these plates were quite as sensitive as the wet process on a well-lighted subject, alkaline developer being used. This process, up to the application of the preservative, was similar in its manipulation to those before mentioned, the preservative being composed of—

Gallic acid	3 grains.
Gum arabic.	20 ''
white sugar	10 "
Water	I ounce.

In all photographic work the proper cleaning of the glass is a matter of the greatest importance. Glass as it came from the dealers was first examined for imperfections, scratches, bubbles, etc. The edges were ground until smooth, then placed in a dish containing nitric acid, or in later years, bichromate of potash and sulphuric acid. After soaking several days the plates were washed thoroughly in running water and placed on a rack to dry, after which each glass was cleaned by hand-in fact, polished, like the "buffing" of a daguerreotype plate, but even with this preparation the film would often become detached and the negative spoiled. To overcome this difficulty a solution of benzole and india-rubber was applied to the edges before or after coating with collodion. This answered fairly well until a dilute solution of albumen in water was tried. This simple preparation prevented any slipping of the film and was a precious boon to both wet and dry-plate photographers. JOHN C. BROWNE.

## THE PROPER SELECTION AND USE OF PLATES.

In all branches of the arts, the inexperienced practitioner is known by the extremes to which he goes in the use of his materials. A novice in using the microscope will employ the highest magnifying power he has at his command, while an experienced microscopist will avoid the use of high powers when they are not necessary. This is only one of a great many cases where the inexperienced are in this way distinguished from the experienced. It is unfortunate, however, that the same rule does not apply in the case of photography; here the extreme seems to be resorted to by both classes. The best evidence that such a state of affairs exists is the universal preference for rapid plates. The fact most often overlooked is that there is an improper use for everything, no matter how well it may work in its proper place.

The popular notions regarding the different varieties of plates are briefly as follows: Rapid plates require the most care in developing, they are more easily fogged, and it is more difficult to get sufficient printing density with them than with slow plates; and as to their advantages, they work with more softness and delicacy, and there is less danger of getting hard contrasts with them than with slow plates. Now there is, in reality, only one advantage in using a quick plate, and that is the short exposure it will admit of, and this advantage is gained at the expense of a great many good qualities possessed by the slow plate. It is true that in some cases rapidity is to be counted for more than all other qualities; in the portrait gallery it is almost impossible to have too great rapidity. Also, in the case of moving objects, the minimum of exposure is absolutely necessary. In this latter case, however, the extreme of sensitiveness is not always demanded; in marine views, where the illumination is very brilliant and there are no dark shadows,

instantaneous exposures may easily be made on plates of the slow landscape type, and yet it is seldom that any but lightning plates are used for work of this class. The so-called "softness" in rapid plates is simply their tendency to give weak contrasts, and for this reason great delicacy of gradation is impossible with them; the reason why such should be the case will be explained further on. In developing, greater care is necessary with slow than with quick plates. This fact is not generally acknowledged. The hard contrasts given by slow plates are generally attributed to the plate itself, though the fault is invariably the result of bad management in manipulation.



From Aristo-Platino Print by Chickering.

Landscape work offers the photographer the best opportunity to exercise his individual talent and skill in developing. This operation cannot be performed properly except by the photographer who made the exposure, and should be conducted to suit the particular subject. The sky in a landscape is never of a uniform tint; even in the clearest weather there is a faint difference of shade near the horizon, resulting from mist or from the heat rising from the ground. This effect does not always make its appearance in the photograph; the sky generally develops perfectly white or of one uniform shade. Light clouds, unless they are very strongly marked, never impress themselves on the plate. The general appearance of the picture is as if devoid of atmosphere. To secure the atmospheric effect, the faintest visible contrasts must be recorded on the negative. Now, very rapid plates are not capable of taking very faint contrasts; this is obviously owing to their inability to

attain a high degree of opacity. Where there is a low limit to the opacity, all the lighter shades must fall to a uniform level as they approach this limit; consequently, the faint contrasts in the high lights must be lost. It is, therefore, of the greatest importance that the emulsions should be capable of giving a high degree of opacity, and only slow emulsions possess this property. Though it may not be necessary or desirable that the negative should be very dense at any point, the limit of opacity should be so high that it could not be approached by that of the most highly illuminated part of the subject. With some very rapid plates it is difficult to get sufficient printing density even with the most carefully calculated exposure; the contrast between the sky and the deepest shadows remains comparatively weak; the fainter contrasts must be proportionately weakened or completely destroyed. In developing plates of low sensitiveness, the lights often attain considerable density before anything has been brought out in the shadows. In this case the closest attention is required on the part of the operator; the details in the high lights are likely to be obliterated by becoming too dense to be printed through—a result the opposite to that in the case of the quick plate. This tendency towards hardness, generally considered a defect in the slow plate, should not cause any trouble in the hands of a skillful worker; it is possible to go to the extreme of density, but for this very reason we are more at liberty to control the result. If sufficient care cannot be bestowed upon the operation of development to prevent the negative from becoming too dense, there is little hope of success with any plate.

In developing a slow plate, even when the exposure has been correct, two or more changes must be made in the developer before the operation is complete. The plate should be very closely inspected at different stages of the process; if the tray is kept covered except when the plate is being examined, a comparatively strong light may be used with perfect safety. When the plate is fully developed, the detail in the high lights should be distinctly visible by transmitted light. If by this time the shadows have not been sufficiently developed, either the exposure has been very much too short or the development has been mismanaged and cannot be carried further without danger of getting too much density. A common rule in developing is to bring out the shadows first and to allow the plate to gain density by restraining the developer. This plan should always be avoided, if possible; there is danger of the lights becoming flat by too rapid development before the restrainer is added. By making the proper modifications in the solution before the development has progressed too far, everything may be brought out together. When this cannot be done, it is better not to sacrifice the delicate gradations of the negative for a few details in the deep shadows which were probably not visible in the original subject. When the shadows are very dark, it is proper that they should remain so in the negative. The brighter objects are the first to attract the eye, and should be the first to be considered in the photograph. If there are clouds in the sky, they can, by careful management, be brought out on the plate. To secure clouds on the same plate with land objects is



NEGATIVE BY H. B. VANDERVEER.

UNIVERSITY OF ILLINOIS

a very difficult matter, however, and is on this account seldom attempted. When clouds are to be introduced, they are generally printed from a separate negative. This cannot always be done successfully, and is not legitimate photography. Clouds may be more successfully photographed alone than with other objects, but they should then stand by themselves as cloud pictures.

Errors in exposure can be corrected in development if they do not exceed a certain limit. A high degree of accuracy in exposure is not necessary for practical purposes—where ten seconds would be proper, nine or eleven may be substituted without material difference—but it is only a mere accident if we come within these limits. By taking into consideration the speed of the plate and the aperture of the lens, we have two of the three factors that govern the exposure, the third being the actual intensity of the light. Of this last quantity, nothing can be known by any amount of experience; the apparent brightness of the illumination on the ground-glass is no guide in estimating its actual intensity, for, as the eye adapts itself to suit different quantities of light, considerable variation in intensity may take place without any visible effect. The actinometer, or exposure-meter, is an instrument by which the actual intensity of the light may be measured with sufficient accuracy for all practical purposes. This instrument requires no more skill to use than any other piece of apparatus, and it removes all uncertainty in estimating exposures.

What has been said in regard to slow plates applies only to landscape work and marine views; for indoor work and architectural subjects, we may take advantage of rapidity-other qualities being of less moment. It should be remembered that it is only the densitygiving power of the slow plate that is desired. It is unfortunate that this property belongs principally to slow plates, for rapidity is certainly an advantage in every class of work. Some rapid plates give less thinness than others; of two plates of the same speed, that which gives the most density is the one from which we may expect the best results. When an emulsion has been prepared for the purpose of giving "softness," its finest qualities have been destroyed simply to obviate the danger of hard contrasts arising from carelessness in manipulation. Where rapidity is necessary, density-giving power must be sacrificed, but it should not be purposely suppressed. The demand for slow plates has so fallen off within the last three years that some factories have dropped the manufacture of them entirely. This is partly owing to the introduction of hand cameras, which require, under all circumstances, extremely short exposures. There are many who consider the setting up and adjusting of a tripod camera and the use of an exposure-meter an elaborate undertaking to secure a single view. Certainly, if the work is not worth this amount of trouble, it is worth nothing. In developing, twenty-five minutes is not too much time to take to one plate if this operation is conducted with care. CORWIN GITCHELL.

## A PHOTOGRAPHIC MELANGE.

In this year's issue of that excellent little annual, known to the photographic world as Wilson's "Photographic Mosaics," Mr. William M. Shoemaker, of New York, recommends a reducer which I had occasion to try the other day, and against which I desire to warn my fellow-photographers, both amateur and professional. The reducer consists of an aqueous solution of sulphate of copper and bromide of potassium, followed by a bath of hyposulphite of soda, and is the most energetic reducing agent I have ever met with. Accustomed to the slower-working old formulas, I entrusted a good negative to the treacherous fluid, wherein it whitened so quickly that the sequent hypo solution wiped out the image entirely, and nothing remained but the clear glass. Rendered cautious by this unpleasant experience, I immersed another negative in the reducer and took it out before it had an opportunity to turn white; the result was a reduced but striped nega-

tive that had to be thrown away. Evidently, the reducer in this instance acted unevenly on the film, and thus caused the striped appearance. In some hands this reducer may prove reliable; in mine it has not, and I greatly prefer the cyanide reducing solution mentioned in "The International Annual," as it acts slowly and its effect may be observed. The above-mentioned copper and potassium solution provides an excellent intensifier when followed by a nitrate of silver solution of from 1 to 3 per cent., as recently recommended by a French authority. My experience with intensifiers probably differs in nowise from that of my readers; at best they are unsatisfactory. In my opinion, intensification should only be resorted to when



Study by S. Newman.

another negative of the same subject cannot be taken.

I have recently been experimenting with different kinds of paper, and find that the following are thoroughly reliable and will do all that is claimed for them: American Aristo, Ilo and Nepera paper. I have also tried different developers for bromide paper. Both rodinal and metol gave grayish whites. Metol and hydroquinone was an improvement, but the best results were obtained with the iron developer.

A Chicago firm recently placed a kallitype paper on the market under the name Celerité paper. It is developed with borax and Rochelle salts, and fixed in a concentrated solution of ammonia. It is claimed that the paper will keep in good condition for three or four months, or even longer—a statement that may be disputed.

Dr. Hugo Erichsen.

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E VALLEY.

MIRROR LAKE, YOSEMITE VALLEY.

ENGRAVED FROM HALF-TONE NEGATIVE ON CLIMAX PROCESS PLATE.

MIR

and darker parts of the blacks and browns are not sufficiently differentiated; inference, overexposure. We now try a second plate, giving the whole an exposure of two seconds and the uncovered half an additional exposure of three more seconds. We now have a comparison of two and five seconds. On development we found the two seconds as not quite enough and five a little too much, and thus arrive at, say, three or four seconds as satisfactory. In this way, with a little care and close observation, we can easily and quickly get the correct term for one set of subject, light, lens, stop, etc., etc., and this is our practical index of the rapidity of that particular plate for that set of conditions.

What we have now to learn is how we approximately estimate how much to modify the time of exposure when several, perhaps all, the conditions differ from those of our best plate.

2. The lighting of the subject is, of course, the crux of the question, and this varies enormously. The factors we have to consider are: Time of year, i. e., month; of day, i. e., hour; sky, clouds, etc. The following table will show at a glance how much the light varies from month

	May, June, July.	March and April, August and Sep- tember.	January, February October, November.	December.
II A. M. I P. M IO A. M. 2 P. M 9 A. M. 3 P. M 8 A. M. 4 P. M	I I 1 1 2	1½ 2 3 4	<b>2</b> 3 4	4 6 8

TABLE 1.-MONTH AND HOUR.

to month and hour to hour. Thus, during months of May, June and July, the light from 10 A. M. to 2 P. M. may be taken as practically the same; this is our unit. But before 8 A. M., or after 4 P. M., the light is probably only about half as active; therefore in the table we find 2, i. e., double the exposure. In December, however, the light from 11 to 1 needs about four times the exposure of that during the midsummer three months.

This table only gives us a means of comparing similar kinds of weather, and refers essentially to bright, diffused light. It is convenient to have, for the sake of one's note-book and companion, five kinds of weather signs, thus:

- S.—Sunshine; bright, clear, unclouded; direct sunshine.
- S. and C.—Sun and cloud, yielding bright, clear, diffused, general light.
- C.—Clouds; no sun visible, only the light coming through (not reflected from) the clouds.
- D.—Dull; such a thickness of cloud that there are no differences of light and dark part.
- G.—Gloomy. Not enough light to indicate any chief source of sky light.

  Rev. F. C. Lambert.

(To be continued.)

### OUR ILLUSTRATIONS.

OUR frontispiece is an excellent study, by W. J. Root, of Chicago. The prints necessary for this edition of the Bulletin were printed from twelve negatives, which are, perhaps, as perfect a set as have ever been sent to us. The prints are on Aristo-Platino paper, toned according to the method given in our April issue, that is, with gold and platinum. Some trouble has been experienced by some of our readers with this toning, and in every case the trouble has been traced to the use of impure platinum. Unless the potassium chloro-platinite is pure and of correct strength, trouble will ensue. We have made a great many experiments, and have found that there is nothing to equal the E. A. Platinite advertised by our publishers. It is absolutely necessary that a pure article, of uniform composition, be used, and this printers will find in the salt alluded to.

Scattered throughout this issue are a number of half-tone reproductions from prints by Elmer Chickering, of Boston; S. Newman, of

New York, and Salem Bros. of Little Falls, Minn. These will serve as posing studies, worthy of study by both amateur and professional. The half-tone reproduction of an effect with Strauss marl is from a negative by Coover, of Chicago. It is always desirable to have a nice variety of novelties scattered through the display of specimen portraits in a studio, such as can be readily produced with Strauss marl. These pictures brighten up a display wonderfully, and increase its attractiveness. It is comparatively easy to take a nice bust portrait, which has been made with a plain background, cover the back of the negative with Strauss marl, and then with a pointed piece of wood scrape away the marl where it is not wanted. Any design or al-



Posing Study by Salem Bros.

most any desired effect in background can be produced in this way.

The two full-page half-tones are of unusual interest. One is a specimen of what the amateur photographer can accomplish in the way of home portraiture, when experience and careful attention to every detail are brought into play. The other illustrates our article on dry plates for process work, which appeared in the June issue, and will be of particular interest to photo-engravers.



### SUGGESTIONS FOR COPYING CAMERAS.

THE advantages of inverting the ordinary copying camera, as shown last month, has elicited so much favorable comment that we show two other forms to meet the objections made to the first one, that it could not well be used under a skylight. The camera given last month is used on a daily paper where the copying of drawings is done entirely by electric light.



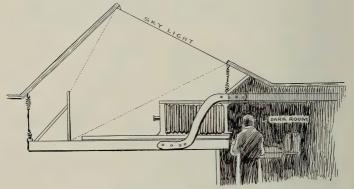
Copying camera, with prism, arranged for the most effective use of the skylight.

The copying cameras represented now are intended to economize space by bringing the skylight and darkroom nearer together, and also save many steps. All the cameras are suspended from the ceiling with stout telegraph wire or rope, connected with steel spiral springs. This is essential. No matter how free from vibration a building is said to be, it is not safe to rest the camera stand on the floor. A good test for vibration is to rest a transparent bottle containing either benzine or ether on the camera bed while the usual walking is going on around it, and see if the surface of the liquid does not ripple. It will astonish one how few places in a large city can be found free from vibration. In New York City the elevated railroads keep almost the whole of Manhattan Island in a state of vibration.

Too much importance cannot be laid in this question of camera vibration in copying fine lines. In half-tone work it is of no such con-

sequence. But much of the filling up of the fine lines is due to this cause, and it can be easily remedied by suspending the camera with some elastic means like the steel springs here mentioned.

Those who use a prism for getting a reversed negative will appreciate the difficulty experienced in getting the copying or plan board well illuminated. The arrangement shown here, it will be seen, secures the best illumination possible from a skylight, thus overcoming the objection of the loss of light through the prism's use. The plan board is moved to or from the lens by a handle shown on the underside of the bed. A sheet of white board is used to focus on, and the sensitive plate is laid on the shelf shown in place of the cardboard, there being no plateholder necessary. The exposure is begun and finished by sliding a frame fitted with ruby glass immediately under the cone which supports the prism.



Copying camera projecting into darkroom, without taking up space in the latter.

There are many advantages in having the copying camera and darkroom combined, particularly where large quantities of work are handled. It is presumed, of course, that there is a boy to tack up or otherwise fasten the copy to the plan board. The operator should not touch the copy on account of the danger of staining it. When the operator can focus the picture in the darkroom he requires no camera cloth, and can see to focus so much better. Then by remaining in the darkened room, his eyes being accustomed to the light, he can develop and perform all the manipulations with more judgment.

Of course, it is unnecessary to explain in detail to our intelligent readers how the space between the suspended camera and darkroom partition is made light tight. Two thicknesses of black Canton flannel, with the woolly side turned in, will be found suitable and durable.

THE Engraver and Printer, of Boston, gives, monthly, examples of both arts that fully justify its title. The decorative work of Mr. E. B. Bird is exquisite, and the whole publication is highly creditable to American process engravers and printers.

### ETCHING ON STEEL.

Mr. W. H. Ford, of Philadelphia, is anxious to find something to etch steel with, and requests the information, "if it is not asking too much." In my experience with etching on steel, the greatest difficulty has been to find a chemical solution that will not etch it, even the moisture of the hand being a mordant. As our inquirer evidently wants to etch the metal to some depth, I would say that the American Bank Note Company uses the following, which is considered a trade secret, and known as Spencer acid, after the discoverer:

### SPENCER ACID.

#### No.

10. 1.	
Nitric acid. Water (distilled) Pure metallic silver	5 ''
No. 2.	f 011700S

Water (distilled) 5 "
Quicksilver. 1 ounce.

The two solutions are made in separate vessels, and then mixed and kept in a glass-stoppered bottle. This mordant can be diluted with water, and thus the intensity of its action can be regulated. A strip of zinc, bent so as to touch a bared portion of the steel at one end and the Spencer acid at the other, is used to establish a galvanic action and start the action of the acid.

### HALF-TONE PICTURES THAT ARE NOT PERMANENT.

It seems strange to speak of half-tone pictures as not being lasting. There was so much trouble with the fading of photographic prints that we always regarded it as one of the valuable features of a print made by any of the photo-mechanical processes that it was in "permanent printing ink." This can no longer be said, for it is now known that much of the modern book and magazine paper made of wood pulp will go to destruction within a generation. The coated papers, those used for half-tone printing, will disintegrate the quickest and the illustrations be lost. It would appear as if of all the flood of pictures we are now making, only platinotypes and pictures printed on cotton or linen papers would be preserved a century hence. The greed of paper manufacturers and publishers causes them to close their eyes to the fact that most of the paper now used will in a short time crumble to dust. but it is the duty of a scientific journal like ours to awaken public opinion in the matter, so that the printed records of our time be not lost to posterity. STEPHEN H. HORGAN

The full-page half tone, from a negative on the Climax process dry plate, will be interesting to our readers. The plate was developed according to the method alluded to in our June issue.

### HALF-TONE SCREEN VALUES.

To the Editor Anthony's Photographic Bulletin:

Sir,—In your issue of April there is a communication from Mr. Macfarlane Anderson, in which he criticises some remarks in a recent paper of mine read before the London and Provincial Photographic Society, concerning the production of the separate dots of a half-tone image got by the use of a cross-lined screen. The style assumed I consider to be offensive, but I can let that matter rest. There are a few points to which I wish to make answer.

In the first place, let me state that I have read the communication in Wilson's Photographic Magazine referred to by Mr. Anderson, and that I consider that it throws no light whatever on the subject at issue, which is the formation of an individual dot. Mr. Macfarlane confuses, throughout, the image as a whole, which is undoubtedly dioptrically produced, and follows common photographic laws, and that of one of the dots which I distinctly say cannot be produced dioptrically, and which I some months ago suggested was a diffraction image of the diaphragm, which I am now nearly sure is. It has long been known that a dot bears a relation to the shape of the diaphragm, and a recent writer in the British Fournal of Photography has proved, experimentally, that it is an actual image of the diaphragm. It is, I believe, in great part, at least, produced by diffraction.

I quote from Mr. Anderson:

"The over-exposed plates will have the middle or half-tone structural formation changed to high-light 'values,' and the high lights gone, 'blazed out'; the shadows rotten and feeble. Such a structural image could not be attributed to 'diffraction images of the diaphragm.'"

To this I answer that each dot certainly can be attributed to—or, rather can be—a diffraction image of the diaphragm.

Mr. Anderson proceeds:

"On the other hand, should the negative have been produced under circumstances considered normal, viz., round stop F/16, screen  $\frac{1}{16}$  inch from plate, the negative would show entirely different 'values,' meaning, of course, difference in the structure of the image. With stop F/54, conditions otherwise the same, the result would have been a fine copy of the screen. Could these effects also be accounted for by the 'diffraction image of the diaphragm?'"

The exact same answer suffices for this.

Still further:

"With the negative five-eighths of an inch from the screen, and using a wide angle lens (short focus), there would have been no 'structural image' whatever; an ordinary negative would have been the result. Could this also be claimed as a 'diffraction image on the diaphragm?'"

There being no dots in this case at all, there is naturally no question as to whether they can be claimed as diffraction images or not.

Mr. Anderson now proceeds to say:

"Circumstances being given as normal, the difference in the forma-

tion of the structural image is determined by the light intensities or tones of the picture to be produced. The high lights act upon the sensitive plate with preponderating force, and affect the atomic structure of the film to a much greater radius from each impinging point than those parts affected by the less luminous middle tones or light intensities, the printing density of the differential light points being obtained, as every half-tone worker is aware, after judicious intensification has been resorted to."

This paragraph, as it stands, is quite meaningless; but I imagine the idea the gentleman intends to convey is that the fact that many of the dots in an image are larger than the openings in the screen, through which the light to form them passes, is due to lateral chemical or molecular action. That to lateral chemical action may be partly due the extra size of the dots in the deepest shadows I will not deny, but it certainly cannot account for the shape, or more than a little for the size of the dots. Will Mr. Anderson explain by lateral chemical action, the fact that many of the dots are smaller than the openings in the screen through which the light to form them passes? Or, again, how it is that the density of the small dots is not much less than that of the large? We do not need to be told that "judicious intensification has been resorted to," because we all know that. It is no explanation of the phenomenon I mention.

The little advertisement at the end of the communication is quite touching. I sincerely trust that whoever may be referred to as "we" will have all the success in business that they deserve, but I recommend Mr. Macfarlane Anderson to get a slightly more clear idea of what is the subject under discussion before he rushes into print again.

Yours, etc.,

W. K. Burton.

IMPERIAL UNIVERSITY, TOKYO, JAPAN.

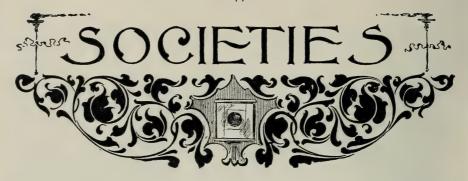
P. S.—I wonder if many of your readers are acquainted with the magnificent diffraction phenomena that are to be seen if a brilliant point of light is looked at through a half-tone screen? The reflection of the sun in one of the silvered glass balls hung on Christmas trees, or even in the bulb of a mercurial thermometer, forms the best "brilliant point of light" to use.

**₩** 

Do not hurry a negative through the fixing bath, but let it remain for a few minutes after the whiteness has disappeared. It causes endless trouble later on if not properly fixed.

When ruby or canary paper is used for darkroom illumination, it should be renewed from time to time. The paper in course of time fades, and lets in actinic rays which fog the plate.

The reason why brown stains appear after intensification is because the negative has not been thoroughly freed from hypo. The stains cannot be removed.



The Topeka Camera Club.—This Club held its closing meeting for the summer at the residence of the President, Mr. Baker, the evening being spent in the exhibition of lantern slides made by Club members. The Club is the only one in the State and was organized September 5, 1894, with twelve members, having now some thirty-six active members. It has had good success in every line of photographic work it has undertaken, securing particularly artistic results in the illustration of short poems. The Club will re-assemble the first Tuesday in October next to compare experiences and results of the summer's work. Officers: President, G. C. Baker; Vice-President, Wm. E. Swift; Treasurer, W. E. Culver; Secretary, Mrs. Wm. E. Swift.

Providence Camera Club.—At the annual meeting held June 4th, the following officers were elected: President, R. Clinton Fuller; Vice-President, W. P. Mather; Treasurer, Edmund A. Darling; Recording Secretary, F. P. Wilbur; Corresponding Secretary, J. Eliot Davison; Librarian, Geo. F. Curtis.

### TO EXHIBITORS AT THE OHIO STATE CONVENTION.

\_43.----

It is imperative that your exhibit be at the City Hall, Columbus, by July 20th, so that the judges can make their selections for the salon. The judges have kindly consented to come to Columbus for this purpose only, and let us see to it that our pictures are on time for this most commendable of enterprises. Everybody into line, and let us take one step up.

J. M. Appleton,

Chairman Committee on Salon.

## BOOKS RECEIVED.

All Books Noticed under this Heading may be obtained from our Publishers.

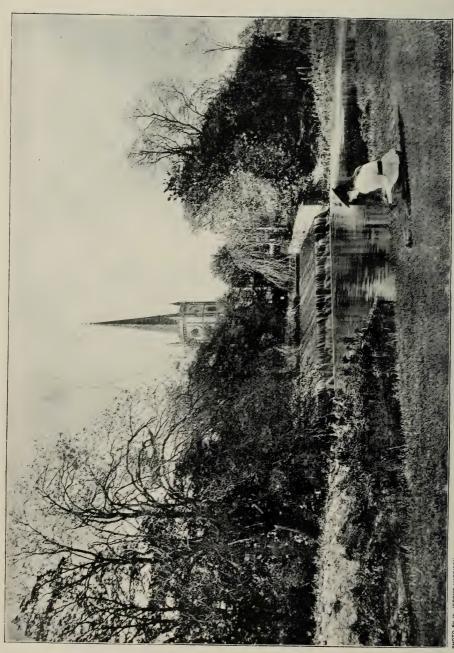
PROCESS WORK YEAR BOOK.—Penrose & Co., London; E. & H. T. Anthony & Co., New York. Price, 75 cents. An excellent annual, indispensable to the progressive process worker. Splendidly illustrated.

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# ANTHONY'S

# Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

Vol. XXVI.

AUGUST, 1895.

No. 8.

### EYE-RESTS.

In most galleries eye-rests are things of the past. Yet there are not a few photographers who still employ some fixed device in order to direct the eye of the subject. The eye-rest is not a necessary article; indeed, its use is generally attended with the production of photographs

that do not give satisfaction, because the eyes are not right. Hard-staring eyes are the product of the eye-rest. Perhaps "stare-producers" would be a more appropriate name for these articles. It is a fact, that, given two photographs, one made with and the other without the use of such a rest, a most distinct difference is noticeable, and the preference will always be given to the one made without this accessory. To ask a sitter to look at an object and to then move away to the camera is to produce in the mind of the ordinary individual a strong desire to turn the head to watch the operator, and at the same time to impress him with the stern fact that upon him and the immovability of his eyes depends his securing a proper return for the



Electric Light Study by Hastings.

money he has just left in the reception room. In consequence he stares unnaturally, and oftentimes the result, in spite of the retoucher's efforts, shows him "ghost-struck," as we have heard it called.

The general expression of the face depends largely on the eye, and the whole effect aimed at may easily be lost by failure to make the



R. CHILD BAYLEY'S interesting lecture on Lippmann's color process, printed in full in the July Bulletin, should be read in connection with the article on "The Influence of Gelatine on the Double Decomposition of Salts," contributed by J. Gaedicke to our issue of September, 1894. The author therein gives an account of his experiments, proving that in emulsions made at low temperatures and under the conditions most favorable for a grainless film, the silver nitrate and potassium bromide can exist side by side without change, and shows that grainless emulsions should be allowed to stand as a jelly for some twenty-four hours before washing.

The subject of "Spirit Photography" was discussed at the June meeting of a London photographic society. Mr. P. Everitt, who opened the discussion, had yet to be convinced of the genuineness of the results shown. He characterized the condition of "receptivity" usually laid down as empty parade, and asked who was so likely to believe as he who lent a willing ear. Was it, he asked, reasonable to accept the evidence of the people who took these pictures?

So many frauds of this nature have been exposed that it seems remarkable that spirit photography should have any adherents. We remember one case in which one of the illustrations in "The International Annual" figured as a spirit. Ridicule is the best weapon for such nonsense.

The convention of the Photographers' Association of America, to be held on the 6th, 7th, 8th and 9th of this month, at Detroit, Mich., will be a notable one. All the novelties of the year will be displayed. Our publishers have engaged the whole floor just above the meeting room, and will exhibit the latest improvements in the artificial lighting of studios, and in studio apparatus. A magnificent collection of prints on Aristo paper will show the possibilities of this best-of-all printing-out papers, and a set of unique carbon prints will bear testimony to the excellence of the Autotype Company's product, and to the Climax dry plates upon which the negatives were made. Photographers who desire to be posted on the latest in photography should be in Detroit. The money spent getting there will be a good investment.

The lighting of photographic studios by electric light has received considerable impetus of late, and some of the best galleries in the

country have installed the Anthony system. An excellently illustrated circular is sent out by our publishers, and all professional photographers should peruse it.

LAST CALL-Detroit Convention, August 6th to 9th.

The photograph herewith reproduced in half-tone shows another effect obtained by the aid of Strauss marl. The amateur photographer can make up for his lack of proper backgrounds by stopping out all but the figure on the negative with marl, and working in any design by the aid of a blunt piece of wood. Another novelty is Strauss

-00' 8'00-



Effect with Strauss Marl.

modeler, a fine, scented powder, which, dusted on bald heads, kills objectionable high lights.

We have received many excellent prints during the past month, some of which we hope to reproduce at no distant date.

Mr. John C. Browne, of Philadelphia, sends us a letter which is of interest historically. It reads:

"Recently I happened to be present at an auction sale of a large lot of stereoscopic pictures, collected between the years 1859 and 1870. The subjects were of the greatest variety, embracing single portraits,

groups and landscapes from almost every portion of the earth, some being colored and others uncolored.

"In the distribution some interesting pictures came to my share, among them nearly one hundred of 'Anthony's Instantaneous Views,' made in New York between 1859 and 1868. There is no guess-work about these figures, for many of them have the dates printed upon the cards. I had expected to find a lot of faded, yellow pictures, whose only attraction was of an historical character; but I found a well-preserved collection of photographs, evidently made with drop exposures, and possessing qualities that would be recognized as excellent, even when compared with the rapid gelatine plates of to-day.

"I have before me 'No. 16 Broadway,' copyright, 1859, by E. Anthony, an admirable picture, showing the street filled with moving

wagons and the pavements crowded with pedestrians.

"Another, 'No. 188 Broadway on a Rainy Day,' copyright, 1860, by E. Anthony. This is a remarkable effort of photography, being practically a duplicate of the former picture, except that rain is evidently falling, as the streets and pavements are wet, and people are seen carrying umbrellas over their heads. I will not weary you with a description of other pictures. But I was so much pleased to find photographs thirty-five years old printed on albumen paper, negatives by the wet collodion process, practically in as good condition as when they were made, and showing such excellent optical, chemical and printing work, that I venture to call your attention to the fact."

THE July number of the Practical Photographer is, as we prophesied,

an excellent issue. It is called, "Child Studies Number," and is of great interest to all lovers of children. Regarding the photographing of the little ones, the editor writes:

"The art of photographing children successfully is, without doubt. one of the highest marks at which the photographer can aim, but it is a line which is beset on all sides by difficulties and disappointments, and the resulting pictures are often failures. A child photographer must be born, not made. There are some men who can certainly never hope to attain the eminence which comes quite naturally to others in this branch. They cannot sufficiently unbend to become successful. Their sense of personal dignity stands in their way, and, to put it plainly, they consider that they



Electric Light Study by Hastings.

are making fools of themselves when they condescend to bring down their mental capacity to that of the youngster they have in hand. And there are others who take an exactly opposite course, and who seem to have no tact whatever in gauging their conversation so that it may be interesting to the juvenile they are about to operate upon, and who consider that the worn-out notion of a little bird coming out of the camera is an excellent topic suited equally to all sitters whose ages range from two to fourteen. These men are regarded as idiots by the children, who are, as a rule, quite capable of grasping the notion of what is required of them if it is put to them sensibly. These two opposite extremes may be called the foolishly childish and superfinely self-respecting. There are happily, however, a number of persons to whom the art of making themselves agreeable to children of all ages comes naturally, and who are instantly at home with all classes of sitters, and it is from these that we must expect the most charming and effective child studies."



WITH great regret we learn of the death of the son of Mr. Horgan, of the firm of Horgan, Robey & Company, Boston. We extend our heartfelt sympathy to our bereaved friend.



A college of photography has been started at Effingham, Ill., and those who desire to become proficient in any branch of the art should correspond with the President, L. H. Bissell. The Bulletin will be pleased to furnish any information regarding this institution.

A British patent, specification No. 15,217, August 9, 1894, for "Separating photographic films from their supports and enlarging same," has just been published. It reads:

"Citric acid, or other vegetable acid of a like nature, is mixed with an alkaline fluoride, such as fluoride of sodium, in proportions as follows:

Fluoride of sodium	ı dram
	o drams

which is a suitable proportion for enlarging the gelatine to twice its original size. If, however, a greater enlargement is desired, the citric acid must be increased, and if it is desired to obtain an enlargement of less area or merely to remove the film from its support, the proportion of the acid must be reduced. When it is desired to employ the above mixture, it is dissolved in water in about the proportions—

Fluoride of sodium	ı dram.
Citric acid	9 drams.
Water	

"The proportion of water varies according to the hardness of the gelatine dry plates. The mixture having been dissolved, the negative is placed in the solution and is allowed to stand therein until the film becomes separated from its support or base, when the film is removed and placed in a bath of cold water, where it is allowed to remain until the desired enlargement is effected."

Work on the eighth volume of "The International Annual" is in an advanced stage. All articles and illustrations should be mailed so as to reach the editor on or before August 17th.

Transparent spots of irregular shape on the negative are caused by dust. Keep the camera and holder free from dust, and brush off the plate carefully before placing it in the holder. Round, transparent spots are due to air bubbles in the developer, and fine, transparent lines to the use of too stiff a brush in dusting off the plate.

Negatives that have been stained by silver can be cleaned by rubbing with a plug of cotton wool wetted with a weak solution of cyanide of potassium. The whole plate should be rubbed, a little extra force being used on the stained parts. Wash well afterwards.

Yellow stains on negatives, caused by decomposed developer, or insufficient or decomposed sulphite of soda in the developer, may be removed by immersing the well-washed negative in the following solution:

Sulphate of iron 3 ounces.
Sulphuric acid. 1 ounce.
Alum. 1 ounce.
Water. 20 ounces.

Wash well and dry.

A MOTTLED appearance on the negative may usually be traced to the use of a fixing bath containing alum, if this is old or turbid. Crystallization on the negative and fading of the image is due to imperfect elimination of the hypo.

The June issue of the Developer comes to hand just as we are going to press with our August issue. This magazine is labeled "The Official Organ of the American League of Amateur Photographers." The readers of the Bulletin will be pleased to learn that the Developer relies entirely for its "Society Notes" upon the Bulletin. The Bul-LETIN reports are printed word for word in the Developer, and in one case a rather ridiculous error is made, a paragraph reading that the publishers of the Developer were giving two solid gold camera watch charms for exhibits at the "National Camera Club" in Washington. Our readers will doubtless remember that these prizes were awarded by Messrs. E. & H. T. Anthony & Company, the publishers of the Bulle-TIN. We mention this point just to show what might be saved by the proper acknowledgment of the source of the article "Among the Clubs." It is remarkable that the "Official Organ" does not add or subtract one word from the society reports in our June Bulletin, but prints them without addition and without acknowledgment. The Bulle-TIN does not object to having its articles, or the information which it gives, reprinted anywhere, so long as the articles are not specially copyrighted, but it does most strenuously object to such articles being used without proper acknowledgment.

### EXPOSURE—SOME HINTS AND AIDS TOWARDS COR-RECTLY ESTIMATING IT.

(Continued from page 237.)

 $\Lambda^{S}$  to the relative exposures, experience here alone can guide, so much depends upon the color of the light, density of clouds, fog and mist in the air, etc. But speaking very generally, we may say that, as regards exposure, the two first, viz., S., S. and C., are often equivalent to each other, but often the second, i. c., S. C., is really a quicker light than a deep blue, unclouded sky, and in nearly every case yields more pictorial results. The unclouded sun casts hard and sharp shadows; the high lights and deep shadows are often quite flat and without gradation, whereas the light of S. and C., when the clouds are not in excess, yields the most perfect of all lights for out-door work, giving softness and delicacy in both the high lights and shadows.

If we put down S, and C, as 1 to 2, we should perhaps find C, to vary from 2 to 4, according to the thickness and number and size of the clouds. D, would thus on the same day be represented by, say, 4 to 8, and G, would vary from 8 to, say, practically no available light. In estimating light there are several aids to experience. For instance, noticing how much or little shadow is cast by near and distant objects, how much detail shows in distant objects—leaves on trees, brick marks on buildings, etc. The color of the light should be noted, i, e, if white objects appear at all yellow. The amount of fog or haze in the air, also, is an important factor. A slight white fog with bright sun acts much in the same way as S, and C, i, e, yielding a soft, diffused light. Yellowness in the fog increases the time of exposure considerably. A slight haze often adds to pictorial effect by subduing detail and giving the atmospheric effect of distance.

3. The Color and Distance of the Object.—A very brief photographic experience is enough to impress one with the important part which color plays. For instance, two cottages, lime washed, one with a touch of blue, the other with a tinge of yellow; to the casual observer they look just about equally light, but our ordinary plate renders one white and the other gray. Assuming that we are not using color-sensitive plates and screen, the question of color is still one of great importance in helping us to determine correct exposure. Here again there is no royal road, and none so good as a little practical experience. Get together several pieces of colored papers or fabrics; let them be, say, 10 or 12 inches long and 1 or 2 inches wide; when you have some three or more of each of the following colors, viz., blue, blue-green, yellowgreen, yellow, orange-red, violet, brown, then arrange them on a big sheet of card, side by side, in the order they seem brightest to you when viewed with the eyes nearly closed, or through smoked glass, so as to get the impression of brightness, i. e., degree of light and dark, rather than color. Set up this color chart, and take a series of test exposures in the way already described. By pushing in the slide shutter a quarter length at a time, we may get a set of four different exposures on the same plate. A little quiet study of the resulting negative and a print from

it will yield some very valuable knowledge. Not seldom in our outdoor work the interest centers on some rather curiously colored object, and we feel that we must get that part right whatever happens to the rest of the plate. A little color experience in such cases becomes of paramount value. The distance of the nearest important shadow or dark object is again another factor which is often of very great help in determining exposure. The old rule of exposure for the shadows here applies, if we make the slight alteration of saying the nearest shadows. And by shadows we must not be too literal, and limit ourselves to actual "cast shadows," for likely enough there may be no "cast shadows" in the subject. Shadows here must be extended to include the dark parts, i. e., the parts of low actinism. For instance, the subject might be a pale blue on the shadow side and red or yellow towards the light; in this case our shadows would be not the shadows of blue, but the slow-acting red or yellow; and if we did not duly heed them, probably our print would be darker on the light side than where Nature had put the shade, i. e., part away from the light. We must therefore take into account the color of the near objects, as well as the nearness of the foreground colored objects. A glance at Table 2 will give some

TABLE 2.—DISTANCE OF NEAREST SHADOW.

5 yards.	10 yards.	50 yards.	100 yards.	500 yards.	Distance.
4	I	1/2	1/3	<u>1</u> _5	10

rough idea of the importance of bearing in mind that as we get nearer to a dark object it becomes for our purposes darker, *i. e.*, requires longer exposure. For instance, if we knew that a group of black and red cattle at a distance of fifty yards needed an exposure of one-half a second, when we move up to, say, 10 yards, we must increase the exposure to at least double.

4. The lens and stop used must also be kept in mind. Where the object is at some distance then the lens may be considered to be working at its focal length and the f-value of stops so estimated; but when we get near objects, say anything with five times the focal length of lens, e. g., copying, etc., then we must remember that the stops marked f/8, f/16 and so on, are not now this value. A brief calculation will show us that when the object is away from the lens five times its focal length, then the lens is working at a distance of one and a quarter its focal length from the plate; but when we go still nearer and have the image half the size of the object, so that the lens is only three times its focal distance from the object, then it is working at one and a half times its focal length from the plate. Then the stop marked f/16 is no longer that value, but f/24 and so on. When "copying same size," the lens is just double its focal length, both from object and plate, and the stops are only half their marked value; thus, that marked f/8 is now really f/16, and so on. While when we pass on to enlarging, this alteration of

the marked value of the stops becomes still more; for instance, when the image is double the object the lens is three times the focal distance from plate, and stops are therefore one-third their marked value.

5. The desired result, also, is a very important element in determining the correct exposure for that end. To reduce contrast we shall increase the exposure, and per contra, to increase it we reduce the time. For instance, the interior of a church, with whitewashed walls and black oak roof. Suppose the exposure to have been unduly short; on development the white walls first appear, showing some gradations, but the deposit goes on growing until all the available silver is deposited before we get more than the slightest trace of the oak carvings; the resulting print is of course black, without detail, and white walls ditto. By prolonging the exposure and developing we get first the white walls, appearing with gradation, but before they have gathered any very great density the darker parts begin to show, so that before the

available silver has been deposited in the high lights the exposure of the shadows has been sufficient to give them a proper printing density. If the exposure has been overdone then we get the various tones, following each other so quickly in their birth in the developer that the result is full of detail, but flat, of too even a deposit all over. Carrying the time of exposure still further, we ultimately arrive at a point where the high lights begin to "reverse," and are thinner than some darker parts.

In the opposite case, a subject showing slight contrast, our exposure may best be only just long enough to give the highest lights a good start, so that they may gather up a good thickness of deposit before the shadows begin to grow.



Electric Light Study by Hastings.

Obviously this part of our subject is intimately connected with the nature and modifications of the developer. But it has been thought best not to enter upon that subject in this note, but to defer it until some other convenient occasion. However, it must always be kept well in mind that the exposure must be made with reference not only to conditions and results desired, but also to how those results are best obtained by development.

It is more than probable that one chief reason why so many plates are lost and lamentable disappointment encountered through faulty exposure, is that the beginner does not see the great importance of keeping an accurate record note book of every exposure, and constantly consulting it frequently. It is very little use to keep account of the correct results only. The beginner is strongly recommended to start

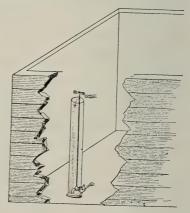
a note book forthwith if he has not already done so, and to make it his invariable rule to enter every detail of the exposure immediately after the exposure has been made, trusting nothing to memory, and before development takes place, so that success and failure may appear side by side for comparison. This small aid, earnestly commended from considerable experience, will undoubtedly form the only royal road to sound and safe experience, and will in a short time save many a plate and much disappointment. The note book entries should contain the following items (at least): 1. Continuous number of the negative. This can best be made by pencil on the dry film either before development or after plate is again quite dry. 2. The dark slide number, and so save any risk of exposing the same plate twice. 3. Month. 4. Hour. 5. Light, using the above given abbreviations. 6. Subject. Described somewhat fully, not merely "Church," "House," "View," but thus: "Longstone Church from S.W., red roof, gray walls, ivy," etc. 7. Lens. 8. Stop and its focal value. 9. Exposure. 10. Brand of plate or film. 11. Results, including developer used and any hints to be deduced for future guidance. Verbum sat sapienti.

Rev. F. C. LAMBERT, M. A.

### TANKS FOR PROFESSIONALS.

UR old friend, George H. Hastings, of Boston, is a practical photographer from way back, and while the heading of this article might possibly suggest that he was capable of giving a tip on other tanks aside from those used in the photographic business, the tip here

referred to is purely photographic. In his negative washing tank Mr. Hastings used for years what is usually termed the overflow standpipe. This standpipe consisted of a plain, simple tube, about 2 inches in diameter, at the bottom end of which was a collar that fitted into the wastepipe hole in the bottom of the tank; the top of this standpipe going to within a couple of inches of the top of the tank. The idea of this standpipe was to allow the tank to fill with water to the top of the standpipe, when it would overflow fast enough to prevent



the water from rising any higher and overflowing the walls of the tank. Mr. Hastings says that he used this scheme for a long time, depending on carrying the hypo water through this outlet, but after a time he decided that this scheme was a poor one, and, after giving the matter quite a little thought, decided on a plan which is explained herewith. He did not discard his standpipe plan entirely, but simply improved upon it by placing near the bottom of the pipe, just above the bottom of the tank, a small water faucet, the outlet of which emptied into the standpipe, and the handle for shutting off and turning

on was extended upwards from the faucet through the inside and to a point about 1 inch above the standpipe, the idea being to carry off the hypo water through the medium of this faucet at the bottom of the standpipe, and to allow the surplus overflow an outlet through the top of the standpipe as usual. Mr. Hastings says that he figured that the hypo water was so heavy that it never raised over one-third the height of the standpipe; that the fact of the matter was that the outlet at the top carried off almost pure water, and therefore did not serve the purpose intended except in a very slight degree. But with this improvement he says that when the tank has been filled up and the overflow at the top of the standpipe begins, then the small faucet at the bottom of the standpipe is turned on slightly, and the heavy hypo water is effectually carried off through that outlet. This invention of Mr. Hastings is not patented, but is presented to the fraternity through the *Pointer* with Mr. Hastings' compliments.—*The Professional Pointer*.

### PRISMS AND MIRRORS FOR REVERSE NEGATIVES.

THE continuing spread of the mechanical processes of photography, in which reversed negatives are an essential, has led to the now very general plan of taking such negatives direct in a camera by the aid of optical appliances—prisms or mirrors—to the almost exclusion of other methods of producing them. When some operators, for the first time, take either a prism or mirror to work with, they often get into difficulties through not knowing anything about the instruments they have to employ. Although the subject of reversing mirrors and prisms has been dealt with by us more than once within the past few years, it does not seem to be well understood by some present-day workers, hence our again alluding to it in a practical way.

Only quite recently we were asked questions in connection with mirrors, which one would have thought would have been impossible from workers of no little experience, such as, Why would not a piece of ordinary looking-glass, that may be had for a few pence, do as well as the mirrors which are sold at high prices? Or, why is so much more charged for a piece of glass silvered on the front than for a piece which is silvered on the back? Even as recently as a few days back a process-worker remarked to us that he had been obliged to stop work for the day, as one of his lads had, accidentally, made "a scratch right across the mirror," and it had to be sent away to be resilvered. He seemed to be much surprised when told that the scratch would have done no harm whatever. One would have surmised that it would have been obvious to every body that a looking-glass silvered on the back has two reflecting surfaces, that it would, necessarily, give a double image in the camera, and consequently would be useless for photographic purposes. It was not, however, in the instance referred to, until it was pointed out. Not a few still seem to be under an impression that a piece of ordinary plate glass, silvered on the surface, will answer as a reversing mirror for taking negatives. That, of course, is an entire fallacy, as the surface of the glass must be as accurately worked as is the surface of lens.

We shall digress for a moment from mirrors to consider the question of prisms as a means for the reversal of the image. Although prisms have but a limited use in this country, they are in more general employment on the Continent than mirrors. They are usually fitted in front of the lens, and the only advantage they possess over the mirror, so far as we can learn from those who have had considerable experience with them, both here and abroad, is that there is no silvered surface exposed to the air to get tarnished. Prisms are, necessarily, much more costly than are mirrors, particularly in the larger sizes. The prices quoted in the catalogues of two of the most eminent Continental makers for those with something less than 5-inch surfaces is equal to from £60 to £70 each. This price seems high, but unless a prism is very perfect it is impossible to obtain sharp negatives with it. In a prism there are three surfaces, each one true with the others, to be worked, while in a mirror there is but one. The glass is also an important factor in the case of the prism, as it must be free from all optical imperfections; with the mirror, the optical qualities of the glass are of no import, so long as it is properly annealed, as its only function is to support the silvered, or reflecting, surface.

The chief point in connection with a mirror is that the surface upon which the silver is deposited is an optically plane one, and to obtain that requires as great, or greater, skill on the part of the optician as does the working of the surfaces of a high-class lens. An equally important point is that the mirror is not bent in the slightest degree in its mounting. A perfect mirror, although it may be a ½ of an inch, and more, in thickness, may be so bent, even by very slight pressure, as to render it quite useless. It must be kept in mind that an imperfect mirror or prism will quite spoil the performance of the finest lens that was ever constructed. Well-seasoned wood is generally preferred to metal for the mount, and the glass must be free from pressure in every direction; in fact, it should be so loose in its setting that it will slightly rattle when shaken.

Sometimes the mirror is fitted before the lens and sometimes behind it—usually the former. In this position it is more exposed to the atmosphere while in use than when it is behind the lens; but, on the other hand, when it is in that position, it is exposed to the moisture and emanation from the sensitive plate, if wet collodion is the process employed, and that is most generally the case when mirrors are required. Mirrors, when out of use, should be kept in a dry place and protected from the atmosphere, so as to avoid the tarnishing of the silver as much as possible. The tarnishing does not interfere with the performance of the mirror beyond prolonging exposure. The tarnish can be quickly removed with a small piece of chamois skin and a little fine rouge, lightly applied. Before beginning to clean a mirror, care must be taken that the silver is perfectly dry, or it will rub off. It is always a good plan to place the mirror in the sun, or before a fire, till it is quite warm, before polishing. It should be kept in mind that con-

stant cleaning wears away the silver surface, therefore tarnishing should be guarded against as much as possible. With care, even when in constant use, a mirror will last for many months—or for a year, or more—without resilvering. Resilvering is, however, a very simple affair, by the methods given in the almanaes, after a little experience has been acquired.

With regard to scratches. Some persons seem to be under the impression that, if a mirror gets accidentally scratched, the scratches would show in the negative, hence the mirror must be resilvered forthwith, as in the case just referred to. It need not, however, be said to the more practical of our readers that this is quite a fallacy. The only trouble that arises from a scratched mirror is a loss of so much reflecting surface—less light—and consequently a slightly longer exposure is entailed; but, if the scratches are slight, that will be infinitesimal.—

The British Journal of Photography.

### OBITUARY.-ALEXANDER HESLER.

ALEXANDER HESLER, the veteran photographer and recognized as one of the finest daguerreotypists that ever lived, is dead. He was stricken with what appeared to be apoplexy while making preparations for taking a group at a family reunion, and did not regain consciousness. Gayton A. Douglass, who had known Alexander Hesler for many years, says of him:

"The old gentleman was a truly great artist; in fact, the leading daguerreotypist in the country. He came to Chicago from Galena, and did the best work in the West. Of late he had been doing work for Milander Bros., and it pleased him greatly to think that so many photographers were assisting in reviving an era of daguerreotyping, for one of these pictures, well made, he considered a grand work of art. It has been made the subject of much comment among artists and poets that it was Mr. Hesler who was principally responsible for the inspiration which induced Henry W. Longfellow to write 'Hiawatha.' The incident became known at a dinner in this city, attended by old-time photographers at which anecdotes were discussed, as well as choice morsels and cigars.

"It seems that Mr. Hesler, armed with his picture-taking paraphernalia, wandered into the northwest in search of Nature's beautiful retreats. This was in 1851, and in August of that year, he tramped over the present site of Minneapolis. There was no sign of a city at that time. Coming upon the falls of Minnehaha, he took several views of the 'natural poem.' While arranging his pictures, he was accosted by a man who said his name was George Sumner. The latter purchased two pictures of Minnehaha to take to his home in the East, remarking that he would retain one and give the other to his brother Charles.

"The incident had nearly been forgotten by Mr. Hesler when it was revived in a startling manner. He received an elegantly bound volume of a work by Longfellow, and the principal poem was 'Hiawatha.' On the flyleaf was the poet's signature and the legend, 'With the author's compliments.' Hesler was puzzled to account for the poet's solicitude, and almost a year after the receipt of the book he met George Sumner, who explained the mystery.

"It seems that the daguerreotype had got into Longfellow's possession and taking it with him into the woods, he got his inspiration, as he said, from the pretty view, and wrote 'Hiawatha.' Mr. Sumner said that it was a good thing for the poet that it was the counterfeit of Minnehaha Falls, not the real article, that the poet gazed upon for his inspiration, otherwise there would have been no 'Hiawatha' written. Hesler must have been a great artist to move a poet so with his handiwork."

### WHEN TO USE ORTHOCHROMATIC PLATES.

THE writer has been hauled over the coals in a friendly way rather recently because he stated in Photography that there was not much good in using an orthochromatic plate for landscape work in the middle of the day. It is proposed to examine this statement in some detail, in the hope that any misunderstanding may be avoided. course, there are orthochromatic plates and orthochromatic plates, but the remarks made applied to those which are at present on the market. These are vastly more sensitive to the blue than they are to the yellow. How is a landscape lighted? Let us take as an example one in which there is plenty of sunlight from a high sun, the sky being comparatively free from cloud. Here we have an example of lighting which is the worst to deal with in a photograph. The high lights are lighted by direct sunlight, and often with skylight, while the shadows are illuminated by skylight and local reflections. The shadows are very dark compared with the high lights, and it requires very skillful photography to render the subject at all decently, the great fear being chalk and soot effect. First, let us take the effect on an ordinary plate. We can, if we have proper means, throw any part of the image as seen on the focusing screen on to the slit of a spectroscope, and most people would be surprised to find how little variation there is in the spectrum of the green of a tree from that of a gray wall. Whatever part of the image we observe we shall find that there is a whole spectrum visible, which, for our purpose, we may divide into red, green and blue. If we point it to the blue sky we shall find that we have the same spectrum, but the blue intensified at the expense of the red. In all parts of the image we shall have a continuous spectrum, neglecting, of course, the Frauenhofer lines which must exist in sunlight. As a matter of fact, any object above a few feet away has its local coloring shrouded by the white light reflected from the particles which intervene between it and the camera, and the further away the object, the greater is that shrouding, until in the distance an object looks positively blue, with only a faint suspicion of local coloring. If we mix 2 to 3 parts of sunlight with about 1 part of blue of the color of cobalt blue, we get the color of the blue light of the sky, which indicates that there is an abundance of blue light in sunlight which has to be reckoned with as much as that in skylight. As an ordinary plate is sensitive to blue light, it follows that, as sunlight and skylight both being active in the high light, and the latter principally in the shadows, the photographed effect is principally due to the white light of either kind which is reflected from the objects, and from the intervening small particles, and will give a fair representation of the subject. If we use an orthochromatic plate without a screen, what is the gain or loss? Say it is sensitive to the yellow as well as to the blue (and the yellow sensitiveness is not onetenth of that blue sensitiveness), the effect will be to intensify by some portion the high lights, leaving the shadows unchanged, since skylight possesses but a small proportion of yellow rays compared with sunlight. In other words, the negative will be a slightly harder one,



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FLASH-LIGHT STUDY.

LIBRARY OF THE UNIVERSITY OF ILLINOIS but not harder than would be made by a slightly faulty exposure. The distance will be rendered the same in the two cases.

Let us go a step farther, and use with the orthochromatic plate such as I am describing a yellow screen, and see what effect that will have. The blue rays will be cut off from sky and sunlight. If the sunlight be reduced so as to be of equal intensity with the skylight, the latter will become much less luminous through the yellow screen, owing to the fact that it is so much less rich in yellow and red rays. The high lights being illuminated with sunlight and skylight, it follows that they will be relatively more photographically active than the skylight which illuminates the shadows. Suppose the total illumination of a high light were 40 sunlight plus 10 skylight, and that a shadow had an illumination of the skylight, and if the proportion of yellow to blue in sunlight were 30 to 10 and in skylight 1 to 1, the above numbers be expressed by—

40 sunlight + 10 skylight

Blue 10 + 5 for the high lights,

Yellow 30 + 5

and half yellow plus half blue for the shadow. Without a screen, the blue being by far the most effective color photographically, the high light would be represented by adding the blues and whites; that is, 15 to  $\frac{1}{2}$ , or 30 to 1. When the screen was interposed, the blue being cut off, the photographic activities would be represented by adding the yellows and whites, or by 35 to  $\frac{1}{2}$ , or 70 to 1. The negative would therefore be much harder with a screen than without one, a result which one would certainly not care to have in the landscape under consideration. Further, if there were any local color it would benefit by the sunlight for the same reason.

If we take a negative of a landscape on a cloudy day, the lighting is of uniform quality, and screen or no screen will not matter. The results would be closely identical.

When we come to a sunset, however, we have different conditions. The lighting is still as before, the high lights being illuminated by the sun and the sky. Now, in the orange light of a sunset there is very little blue light, and, as is well known, the most brilliant illumination of a setting sun fails to show itself on a plate without a screen on this account. Practically all the photographically actinic light is high light and shadow is skylight. Place a yellow screen in front of the lens, however, and the whole aspect is changed. Let us take the same figures as before, making sunlight all yellow. We get as a result that, while on an ordinary unscreened plate the ratio of high light and shadow is 5 to 1/2, or 10 to 1, with the yellow screen inserted it is 70 to 1 as before. The effect of sunlight would, therefore, be shown in the last case, but not in the first. It must not be assumed that the above proportions of yellow to blue represent the facts entirely, but they are sufficient to argue upon. Any of these legitimate factors would lead to the same results. If we want cloud effects the use of the yellow screen at all times is useful, for while from the clouds it

allows the yellow contained in sunlight to pass, it only leaves the small amount in the blue sky. The consequence is that the white cloud will be much better delineated when the screen is used than without it. When we have a blue distance the yellow screen is a very useful adjunct to ensure its absence.

It is hoped that this explanation may satisfy those who disbelieved the statement previously made by the writer. It is a matter capable, not only of theoretical proof, but of practical demonstration, which every photographer can try for himself.

The fantastic idea that any landscape has a particular colored screen which is most effective with it seems to have no foundation of fact in a photographic apparatus as ordinarily constructed. There may be occasions, however, which may render some screens useful.

With a lens used with a polarizing apparatus, for instance, a great deal of the reflected white light can be done away with, since, being polarized, it is cut off when the Nicol prism is turned in one direction. In such a case we have local color, such as the green of trees, playing a part which cannot be neglected. Here we may use a screen in order to render this local color, and we may get results which are rather startling, sharp, and "wanting in atmosphere," an expression which merely means that the sky effect produced by intervening particles between the lens and object is cut off.

We may finish this article by describing an interesting experiment which can be made by placing in front of the eye a couple of colored screens. If we take a deep cobalt-blue glass and examine a landscape with it, we shall find that the greens of foliage begin to show a pinkish tint, quite unlike that of a white surface when viewed through the same glass. If in front of this we place a yellow glass, the pink tint becomes a scarlet, all the foliage appears red, and a similar effect, but one that is slightly modified in tint, appears when for the yellow a purple manganese glass is substituted: the scarlet becomes a crimson. The reason of this is that the greens when examined by the spectroscope exhibit red bands, due to chlorophyll. The blue glass itself allows a band of red to pass, which is fairly coincident with the red chlorophyll band, the blue is dimmed, and the green is so totally absorbed that the residue of light issuing from the foliage is the red. A landscape viewed in this way appears almost grotesque.—W. DE W. ABNEY in Photography.

Harold Baker, of Birmingham, Eng., finds that collodion papers use only about one-sixth the quantity of gold required for gelatine papers, and that they are more permanent than any other silver paper. Prints that had been exposed to light and to great differences of temperature for over three months showed no signs whatever of deterioration. This is in line with the experience of American photographers.

A RICKETY tripod may be temporarily made rigid by fastening to the tripod screw a string, to the end of which is attached a heavy stone.

### HANDICAP EXHIBITIONS.

SEVERAL months since, the writer suggested through the BULLETIN handicaps as a feature of some, at least, of the future exhibitions or contests. The article, to a certain extent, served the purpose for which it was written, in that it aroused discussion and called attention to the widely varied conditions under which amateurs work. The fact that the comments, as far as noted, were somewhat unfavorable to the idea was not unexpected; but the weakness of most of the objections was somewhat of a surprise. The value of the experiment to exhibitors, and especially the inspiration which might be given to beginners and those working under adverse circumstances, were mostly ignored, and the trials and tribulations of committees and judges dwelt upon. We failed to be convinced of our efror and return to the charge. Our idea was to have exhibitions which should tend to develop the latent talent among those who, under existing conditions, have no inducements to range themselves alongside of the "medal-hunters."

It is obvious, of course, that a photographic exhibition is a very different thing from a bicycle race; but there are similar reasons why there should be allowances made for the differences between the conditions of the different contestants. The very fact that instantaneous, or snap-shot, views are classified separately from other work, and that other discriminations are made, is a step in the direction we advocate. The widespread and growing feeling of dissatisfaction with the present system, which is being made evident in the photographic periodicals, shows that still further changes would be acceptable.

Other features of practical interest and value might also be added. Each exhibitor might be required to give, on a suitably prepared form, a complete history of the exhibit, both artistic and technical. It should include, as far as practicable, the name, location, surroundings and history of the subject; conditions of light, date, hour, etc. Then the lens, stop, time of exposure, kind and speed of plate, developer and other treatment of negative. Lastly, printing process, paper, toning, finishing, etc. The exhibition of the negative alongside of the print would lend added interest. A comparison under such circumstances could not fail to have educational value, especially to novices. The success of the plan, of course, must depend largely on the co-operation and good faith of all interested.

Another feature, used once at least by the Photographic Section of the Manhattan Chapter of the Agassiz Club, would be to furnish each visitor a suitable blank with the request for written comment and criticism on the exhibition as a whole, and on individual exhibits and prints; these to be afterward collated for the benefit of the club at their later gatherings, or for individual study.

Another suggestion would be that, as far as possible, certain general rules be laid down by which the judging should be governed; and these rules made known in connection with every announcement of the intended competition. Fuzzytypes should not be put in competition with pictures where detail has been the prime motive. While the canons of

art are as unsettled as at present, and the big and little guns go off on such tangents when discussing the question, an intending exhibitor ought to have some sort of idea upon what lines his work is to be judged. This brings us to another point. It would be interesting at least if the judges could be induced to announce on what basis, or for what reasons, they were led to choose for award the successful exhibits.

As suggested in our other article, we do not offer these plans as substitutes for those upon which the larger and more advanced organizations are working, but for the average clubs as a change. It involves work, and care and worry on the part of that self-sacrificing committee, of course; but what good thing does not, and who will hesitate if advantages are to be gained?

C. M. Giles.

# CARBON PRINTING—DOUBLE PRINTING.

THOSE who can carry their thoughts back twenty years or so will remember some extraordinary combination carbon enlargements, quite untouched so far as the prints were concerned, that were shown at one of the exhibitions of the Photographic Society by M. Lambert. The figures, in some instances, were enlarged from paper prints out of groups, and introduced into an entirely different picture. Yet there were no indications that the enlargements were made from paper prints, or that more than one negative had been used in their production. Lambert's method was, for a time, preserved as a secret one to his licensees, but a description of it now may be interesting as well as useful to some. To attempt to give such working details as would meet every subject that at times has to be dealt with would more than fill a number of the Notes, therefore I shall confine myself to describing the way to introduce a plain or other background to an enlargement, say a single figure out of a group. It will be quite sufficient to illustrate the principle, which can then be adapted to suit other subjects or conditions. The enlarged negative is produced in the ordinary way. That M. Lambert skillfully retouched, first covering both sides of the negative with mineral paper, and then working on the paper both back and front. In this way the grain of the paper of the original was rendered almost imperceptible. Now, whether the negative be worked up in this way or not, it is necessary that the back of it be covered with mineral paper, secured firmly at the edges. That being done, the procedure is as follows: The outline of the figure, or what is intended to be printed in the first printing, is faintly traced round on the mineral paper with a lead pencil. A piece of thin yellow paper is next laid upon the back of the negative, and the outline roughly traced on that. This is then put on one side for the present. A printing frame with a rather thin glass—not exceeding a quarter of an inch at most—is now taken, and the negative placed in it and pressed accurately in one corner, say the top left-hand one. The tissue is next taken, and, after being cut at right angles on two of its sides, is placed on the negative, it also being pressed accurately in the corner of the frame. The frame is then closed. It will now be seen that the nega-

tive and the tissue can be removed at will, and replaced in exactly the same position by merely taking care that they are pressed closely into the corner of the frame. The outline of the figure, for half an inch or so on the background side, is painted round on the glass of the frame with a non-actinic oil color, such as burnt sienna or Venetian red, the pencil line on the mineral paper serving as the guide. The color should be kept a little inside of the pencil line, and not directly over it. The yellow paper is next taken, and roughly cut round the tracing, a quarter of an inch or so, both within and without the line, so that about half an inch of the paper is removed. The background portion is now laid on the glass of the frame, to cover up all that is not required outside the paint. The negative is now put to print in a soft diffused light; strong or direct light must be carefully avoided. When printed, the mask and the still wet paint are removed. Then the outline on the figure side is painted round, keeping this time a little outside the line. The frame is then opened and the negative removed. Supposing the background is to be a plain or a shaded one, the tissue is replaced in the empty frame (or another negative can be introduced) and pressed closely in the corner. The frame is then closed, and the rough figure paper mask laid on, and the second printing made, the background being shaded while printing according to taste.—E. W. Foxlee in Autotype Notes.

# FIGURE STUDIES FOR AMATEURS.

POR several years we have in a somewhat desultory way made experiments in such matters as studio lighting, making large head studies, and the like; and, lately, circumstances have led us to take up more in earnest than before what is certainly a most interesting line of work for amateurs whose agility is less, but photographic enthusiasm not less, than in bygone days. Fascinating as is landscape photography, whether pursued for merely "topographic" purposes or with the higher aim of picture production, the study of the human figure will be found not less attractive, and the pictorial effects produced not less pleasing; in fact, we are prepared to say that in figure work photography comes nearer to being a completely satisfactory method of art than it ever can do in landscape, where the details of subject and lighting are so very little at the command of the worker. In outdoor photography the art of the photographer, as has so often been said, shows itself almost entirely in judicious selection of aspects and arrangements. When we have a studio, however primitive, and a model, however inexperienced, we have at least the possibilities of arrangement, and considerable control over the lighting, as well as the opportunity of selection. We believe that photography as an art has shone forth more brilliantly in figure work in such hands as those of Rejlander, Cameron, Robinson, Bergheim, and others, than it has, or ever will, in pure land-

We say, at any rate, that of late we have made more definite investigation into the factors that appear to lead to success in figure work, and we venture to contribute a few observations on the subject, in the

hope that they may be useful, not only to amateurs who think of essaying this kind of work, but possibly also to professional portraitists who have but little leisure for investigating such matters, or for altering the arrangements of the studios they happen already to possess.

Perhaps it may at the outset be said that the commonest fault to be found in such figure studies as are usually seen in exhibitions is that of flatness. We have frequently seen studies, otherwise exquisite, utterly spoiled by this defect; the figures looked as if "squashed" up against the background. This is probably due to either faulty lighting or unsuitable lenses, and these technical imperfections may be discussed. A great majority of exhibited studies have another fault, which will not so well bear discussion. We refer to the lifelessness of the poses, and the lack of action in the general arrangement. Now the ordinary amateur, as a rule, has not a studio built expressly for figure work, and in most cases he has to simply make the best of what he has in the way of a glass house. Figures in the open, it need hardly be said, are never anything like satisfactory, mainly because the light is so generally diffused all round the subject that flatness is the necessary result. The object of a studio is to enable us to regulate the access of light, so that we can get a predominating beam to illuminate the subject, and regulate all other beams with regard to the dominating beam. We used to believe that the correct theory to work upon was to start with light equally diffused from all quarters, and to shut off portions of this general light till we got the desired roundness of lighting, but we have lately come to consider this an erroneous working theory. We are inclined now to say that a sounder course to follow would be to start in darkness, and admit beams of light little by little till we have arrived at the desired point. We believe that this latter theory is a better one than the former for the beginner to have in his mind, for, of course, no one will be likely to put it into actual practice. And we would point out that this system of concentrated lighting is both more likely to be artistic and more true; for it is pretty certain that we observe our friends more closely in the house where the lighting is always partial or concentrated than we do in the open air, where the human face presents less of variety, and where surrounding Nature claims much more of our attention than does the furniture of a room.

A person sitting near a window of moderate size almost always forms a pleasant picture to the eye; there are a roundness of figure and a breadth of lighting that are pleasing. But a photograph of a figure in such a position is likely to be marred by harshness of contrast. At the same time if this harshness is mitigated by brightening up the dark side, or toning down the bright side, or by very full exposure, the result is very often extremely pleasant to look on. The opposite extreme, a person en plien air, is seldom pleasant to look on; the features are flattened, there is no red chiaroscuro, every imperfection shows up. A "studio" is our device for obtaining at will the happy medium between the harshness and the flatness. It will thus be seen that no vast area of glass is required for a studio; and if a studio is glazed extensively it will be necessary to have means of shut-

ting off most of the light. A studio glass all over, if it be properly curtained, has the advantage that we can place the sitter at many different points in the studio; but we venture to say that for an amateur wishing to work in an ordinary way, a studio with 8 or 10 feet of glass at one side and at the top will meet all requirements. The glass side should be the north of the studio, otherwise the variations of exposure necessary will be puzzling, and work will be possible only for certain hours each day. Our own studio, which we found made, and merely adapted, is so placed that work before 2 P. M. is practically impossible. The roof should be sloping, and not parallel with the ground; but even this is not imperative, and depends more on weather than on the question of lighting. A horizontal glass roof is extremely awkward in rain or snow. The roof should be curtained with some nearly opaque material, and also with some more translucent, both being movable. A little top light is often valuable. The side should have muslin curtains, and if the work is to be chiefly on heads and busts the bottom light should be almost wholly cut off to a height of about 4 feet; but for a standing figure this low light will be found useful, so the material blocking this bottom light should be removable at will. Other devices for regulating the light will be described later.

At the outset, we take it as understood that the reader does not propose to tread on the heels of the professional portraitist with the ordinary carte and cabinet performance. The amateur will never successfully vie with his professional brother in these lines, even if it were desirable to do so. We take it that we have to deal with good big heads, and with figures posed for effect, and not for mere "likenesses." The next matter, then, that we wish to discuss is the lens. We say nothing about the camera, for that is merely a question of convenience. A studio stand and a studio camera are much more handy than the camera used for landscape, and the tripod stand. But the lens is of great importance. The main desideratum for the lens is that it shall be of long focal length. Nearly all portraits and figure studies to be seen are done with lenses of too short focus; the consequence is that the figure is distorted and flattened. Lenses of the portrait type of long focus are, as all know, very costly, but, happily, these are not now necessary; and, in fact, other lenses give results in several respects superior to the lenses made specially for portraiture in the days when rapidity was a sine qua non. This matter is too serious to treat very briefly, so we shall defer its consideration till a later occasion.

Andrew Pringle in Photography.

At the recent fire in Santiago, E. C. Spencer, the well-known photographer, was a heavy loser. Mr. Spencer has ordered another complete outfit and seems undaunted by his reverses. The *Chilian Times* says: "When Mr. Spencer arrived at the fire his building was a mass of flame. The roof quickly fell in and the corner room also. As soon as the first streaks of daylight appeared, Mr. Spencer procured a ladder, and, digging away the débris of the roof, unearthed his view camera, and, as there were some plates in it, he made two views of the fire and ruins."



### FIN-DE-SIÈCLE HALF-TONE.

I T was suggested in these pages, some time since, that the future of first-class half-tone work tended toward its being carefully worked up and finished by artist engravers. The prediction comes true sooner than was expected. Examine the process work in any of the first-class magazines, but especially that in *Harper's Weekly* at times. It should no longer be called "half-tone." This title was given with truth to the early plates made through the use of a screen, for the reason that the process was indeed a great leveler. It reduced all shades to half-tones.

The highest lights were darkened and the deepest shadows lightened, which was the reason for the flat result from half-tone plates found in some cases even to this day.

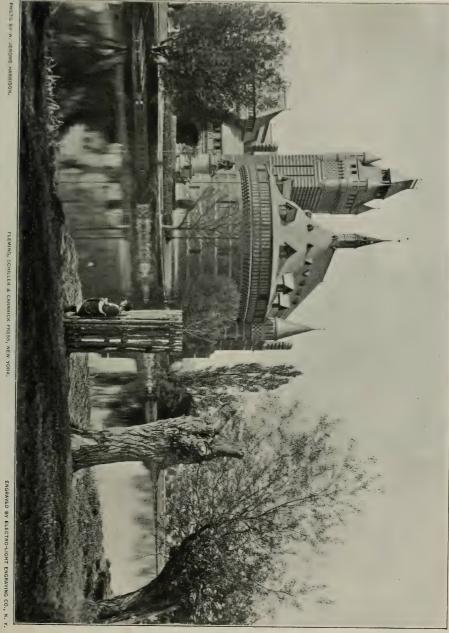
When photographic operatives learned the value of distance between the screen and sensitive plate, and also the use of lens stops other than round, then came more contrast in the resulting plates. It was, however, the introduction of the enamel solution that made it possible for the etcher to control the effects he wanted to produce. By painting on the chloride of iron etching solution, as explained in previous numbers of the Bulletin, he was enabled to secure higher lights in the finished engraving, and by keep-



"GIVE THE WORKINGMAN A CHANCE." [Engraved by the Fort Pitt Engraving Company.]

ing this solution from the darkest spots he retained deep shadows at the same time. There was yet something wanting to perfect the plate. It was too much to expect that half-tone etchers would be artists,

It was too much to expect that half-tone etchers would be artists, though the latter-day wood engravers were more often artists than otherwise. So the half-tone plate could not compare with the work of engravers in an artistic way until it was criticised and improved in their well-trained hands. The retouching of half-tone plates by skilled wood engravers has been contended for here, and close examination of the



LIBRARY OF THE OF THE UNIVERSITY OF ILLINOIS best recent half-tone work will show the picking and cutting of the graver. This should not be looked upon as an expression of weakness on the part of process. It will, on the contrary, by bringing to its aid the skill of the engraver, place its results on so high an artistic plane that the engraver unaided could not reach, and thus will process remain ever indispensable.

### PROCESS-WRITING HUMBUGS.

There is no better journal in the world devoted to the art of printing than the *Inland Printer*, of Chicago. To it, also, should be given the credit of foresight in recognizing that half-tone engraving was destined to work a revolution in press-making, paper-making and printing, and consequently that papers on practical photo-engraving should constitute a department in its publication. After the above compliment, our contemporary will pardon us if we call their attention to the fact that they are being imposed upon by some of their writers on "Process."

The leading article in the July number is an apology to their readers for a series of articles published in previous numbers of their publication on the three-color process. They are frank enough to admit they were humbugged by this writer, and ask forgiveness of their readers with a never-do-it-again air.

This is very honorable in a technical journal to admit error when it is found, but the puddle the three-color-process man led them into is not a circumstance to the mire another writer is plunging them on the subject of photo-lithography. Our readers will appreciate this more fully on studying the following quotation from the *Inland Printer*. The writer believes he is explaining in brief all the methods of applying half-tone to lithography in this lucid style:

"Half-tones are dissolved and disjointed in firm stipples:

First.—By the autotype transfer—by means of inserting the glass screen on the photograph over the sensitive plate.

Second.—By the so-called asphalt process, by means of previous graining of the stone before covering with asphalt and copying.

Third.—By means of producing a grain on the chrome gelatine.

Fourth.—By means of applying the sand-blast, a characteristic of the process of the photographer Bartos.

Fifth.—By reprinting a narrow screen on a polished stone which forms the basis for stone—heliogravure," etc.

And so on through the whole series of articles on photo-lithography. The proprietor of the *Inland Printer* could safely offer \$1,000 to any one to explain what the above means, and double the sum to the writer of it, without any danger of his being able to tell what he is driving at.

The reason for noticing this at all is that some of our readers have written to ask us what is the matter with ideas they have seen in our contemporary, and we have been compelled to answer them personally—any valuable pointer for process men found in our exchanges, we are glad to quote with credit, so our readers can infer why few of our exchanges are ever mentioned here.

### DISTORTION IN REVERSING NEGATIVE FILMS.

An excellent photo-engraver complains that through the ordinary method of reversing negative films he finds sometimes a shrinkage of a 4-inch in 20 inches, and at other times a stretching of the film and that unequally.

The trouble is easily overcome when the cause is known, and here are the causes: In the first place the solution of pure gum rubber or rubber cement in benzole is too thick. It is remarkable how thin a solution can be used. When the solution is put on too thick, it is, on drying, a sheet of rubber stretched across the plate. When the film is released from its glass support this rubber film shrinks and causes the first trouble.

Now as to the second difficulty, stretching, that is due to pulling the film from the plate before the acetic acid has destroyed the albumen substratum. To remedy: Use weaker albumen solution for substratum and wait until the film is about to float off its glass support before attempting to pull it off. To hastening the detaching of the collodion film heat the acetic acid solution.

### HALF-TONE PROCESS NOTES.

The Buffalo *Express* has printed a half-tone block about 3 by 4 feet in size, made from a wash drawing by Chapin, of the City of Buffalo. It was made in nine negatives, the films of which were very skillfully joined.

In regard to the half-tone screen with lines alternating thick and thin, Mr. Levy, the screen-maker writes: "The screen with alternating parallel lines has not proven a success in my judgment."

Levy's screens are produced by ruling a sheet of glass coated with a resin etching ground, and etching the glass or lines laid bare with hydrofluoric acid. The deeply etched lines are filled up with black color, and the surface polished, by which means an extremely sharp, precise ruling is obtained.—Paper and Press.

### A SIMPLE INTENSIFIER.

Mr. WILLIAM GAMBLE gives in the *Photogram* the method of handling the copper intensifier in this terse way:

Sulphate of copper	I ounce.
bromide of potassium	1/2 ((
Water	5 ounces.

"The negative, after fixing and washing, is immersed in this until bleached white. Then a sufficient quantity of the silver bath solution (assumed to be 30 to 40 grains to the ounce) is taken, and, after washing the negative, the silver solution is flowed over until the picture is blackened. The plate is given a good rinsing, and the dots examined with a magnifier to see if they are clean. Probably they will be found

rather "fluffy" at the edges, especially in the shadows—a sort of vignetted dot, in fact, black enough in the center, but thinning towards the edges. This is a case for "cutting," as it is termed; in other words, reduction or clearing. Add I part of the copper bromide solution to 10 ounces of water, and flow over the plate. This will "blue" the shadows. Then apply a more or less dilute solution of cyanide of potassium, according to the amount of reduction to be forced. The reducer acts most vigorously on the fringed edges of the dots, and so sharpens them up; at the same time it clears the negative from veil, so that it prints easily and quickly."

#### THE FUTURE OF COLOR-PRINTING.

In an article on "Color-Printing As It Was, Is and Will Be," *Paper and Press* says that those bound up in color-printing interest should look for the future toward process plates, and adds:

"The initial researches which have made the three-color process possible were carried on in that land of science, Germany, and, did space admit, we should like to give a brief account of the growth of the process. We must be content, however, to say that in this process three photographs are made from the object, and in each the sensitive plate is of such a nature as to absorb one set of rays. In theory the idea seems perfect, and so far as it is applied to lantern slides, or colored transparency, it is quite successful. To make a block of a color-sensation in half-tone is another matter, for immediately white is intermingled with the color, the true value of the color-sensation is lost; this must necessarily be so, for different grades of color are expressed by dots and lines.

"It is a mistake to argue that the sun's light, being composed of three primary colors, a very mundane substance like printer's ink is hence subject to the same laws. The colors of the spectrum united produce white light; pigments closely imitating them produce black.

"The strictly photographic method has not, up to the present time, produced for letter-press printing anything more artistic or satisfactory than other processes, and it has this disadvantage, that if there is the slightest inequality in the distribution of the ink, or any variation in the color used, the whole picture is thrown out.

"We are not advocating the abandonment of researches into a sphere which, we believe, contains much that will be useful to color-printers and artists, but it seems to us that to be ultra-scientific in art is a mistake. A process that employs photography to do that which the hand of a skilled artist cannot do (except with the most elaborate care), and the hand to do what science has not achieved, is a compromise between two extremes"

#### DR. EDER'S PROCESS COLLODION AND DEVELOPER.

Dr. Eder says that instead of using ammonium salts for iodizing, "a series of experiments demonstrated that strontium iodide acts favorably on the sensitiveness and clearness; it also makes the collodion

more fluid, so that a thicker plain collodion must be employed, and, hence, I used a 3 per cent. plain collodion. The following formula was found to be the best.

"The solution is filtered, and there is taken I part of this iodizing solution to 3 parts of thick plain collodion (Schering's celloidin collodion).

"The collodion can be used at once; the exposure is somewhat less than with the ammonium cadmium collodion. The silver bath is 10 per cent. solution as usual.

"The following solution is used for developer:

Water	.1.000	parts.
Sulphate of iron	. 30	411
Sulphate of copper	. т6	6.6
Glacial acetic acid	. 50	6.6
Alcohol	. 30	"

"For fine screen-negatives, such as are usually used for artistic printing, the developer may be diluted with one-third volume of water, so that the developer is then equal to a 2 per cent. solution of sulphate of iron. The exposure should not be too short, as a too prolonged development must be particularly avoided, for this leads to the fogging of the delicate dots, which must, under all circumstances, be prevented. The development is therefore interrupted at the proper time and the negative washed thoroughly."

STEPHEN H. HORGAN.

# THE SCIENCE OF TONE-RENDERING IN OPAQUE INK.

(PRELIMINARY PAPER.)

THE facility with which exact copies are produced by means of photography renders it of great value as a commercial art, but in cases where *fac similes* are required in large numbers pure photographic methods fail on account of the slowness of production and costliness of material.

It is to typographic methods that we look for cheap and rapid multiplication.

In an alliance of the two arts, photography and printing, the characteristic excellencies of both are utilized in the highest degree. The printing block is made by the aid of photography with more exactness and rapidity, and with less cost, than it can be made by hand, and from the block a larger number of exactly similar copies can be quickly and cheaply produced in the printing press.

It is not surprising, therefore, that photographic methods have almost entirely superseded hand methods of making illustration blocks, first, from subjects in line, and, later, from subjects in graduated tones. Blocks from line subjects were naturally more readily produced, as that style of art had been already adapted to the elementary conditions of typographic printing.

The greater difficulties of adapting photographic conditions to printing-press requirements in the case of tone subjects delayed the extended use of what are known as half-tone process blocks. But as soon as the technical difficulties were overcome, and blocks of good quality could be readily obtained, their extreme value as a means of representing pictures in any style of art, and natural objects, was quickly recognized. The result of their introduction has been, not only the almost complete abandonment of hand methods of block-making, but also an immense increase in the use of illustrations in printing work, and this in the face of much existing unsuitability as regards paper, ink and printing presses.

Having in view the great commercial importance of the half-tone processes as a branch of photographic work, and the fact that the information hitherto available has been scanty and almost entirely confined to general outlines, we have considered that the publication of the results of an investigation into the principles underlying the main features of the various operations would be of interest and some practical utility. At the same time, as it is not our object to teach the actual working of the process, we shall omit details of manipulation.

We are indebted to the facilities offered by the photo-mechanical department of the Polytechnic School of Photography for the opportunities for pursuing our experimental work.

# SECTION I.—THE SUBJECT FOR REPRODUCTION.

The subjects which have to be represented by what are known as half-tone blocks are essentially those possessing, in their various parts, a number of different degrees of brightness. These degrees of brightness are known as tones.

Such subjects are of two classes:

- (1) Solid objects.
- (2) Flat objects.

In the case of solid objects the tones are produced by differences in both the reflecting power and illumination of the various parts.

Flat objects may be transparencies or opaque copies, such as prints, pictures, and photographs. In transparencies the tones are due to different degrees of opacity in the various parts, and in opaque copies to differences in the reflecting power of the various parts. In both cases the illumination may be taken as constant, and not affecting the relation of the tones.

The points to be considered by the block-maker are:

- (1) The actual range of tone existing in the subject, *i. e.*, the ratio of the darkest tone to the lightest.
- (2) Whether the whole range existing in the subject is to be represented in the final print.
- (3) Whether the aim is to be to exactly reproduce, exaggerate or diminish tone differences.

Negatives for half-tone blocks are seldom made direct from solid objects, although this is quite possible. For convenience sake a photographic copy of the object, either in the form of a transparency or a print, is commonly used for reproduction. It would, therefore, be of little practical importance to discuss the actual range of tone existing in solid objects.

The operator, however, will require to have a general idea of the range of tone present in such transparencies and prints, as he may be called upon to copy.

In the case of transparencies the opacities of the densest and most transparent parts may be found by Captain Abney's method, or that of Messrs. Hurter and Driffield. The ratio of the two opacities to one another will be the measure of the range.

In the case of prints, the light coming from the lightest parts may be reduced by the aid of revolving sectors until it is found, on exposing a plate, that the density given on development is the same in these parts as in the deep shadows. On finding the proportion of light from the light part, which has to be stopped by the sectors in order to obtain this result, the range existing can be readily calculated.

We have found it best to make the exposure with screen in position, as there is then both density and size of dots to assist the comparison.

It is by no means always essential that the complete range in the copy should be represented in the print; many of the lighter tones in the copy may often be massed together and sufficiently represented by one even light tone in the print, and similarly, many of the dark tones may be represented by one even dark tone. So that the range to be represented may be the whole range existing in the copy, or some part selected out of the whole. In extent it may be greater, equal to, or less than that which can possibly exist in the finished print. If greater, the range must be compressed at some stage of the process of block-making by diminishing the differences between the tones. If equal, it may be reproduced exactly if desired. If less, it will usually be required to extend it by increasing the tone differences:

The operator, therefore, requires to know how to compress or extend the range in the copy when making his block, as well as how to exactly reproduce a series of tones.

These points will come under a later division of the subject.

#### SECTION II.—THE PRINT.

#### (1) The Representation of Tone in Opaque Ink.

In a print from a half-tone block there are actually existing two degrees of brightness only, viz., the proportion of the incident light reflected, in the one case from the uncovered paper, and in the other from the inked surface. The only way in which the appearance of a variety of tones can be secured is by an optical illusion.

ALEXANDER A. K. TALLENT and ALFRED W. DOLLOND.

(To be continued.)

#### THE WATCH CAMERA.

OUITE recently many efforts have been made to furnish photographers with a really efficient camera that is truly a detective camera, which, while being very compact and portable, is at the same time capable of producing work of good quality that will stand enlargement. Many toys have been produced and many cameras of more or less complex mechanism. It must be remembered that simplicity in a camera is most desirable, and this is especially the case where the camera is very small, for then the mechanism is necessarily delicate and liable to get out of order. In some of the small cameras we have seen the shutters have been beautiful pieces of mechanism, but suffer considerably when handled by the tyro. The latest novelty, however, seems to be free from complication, and has the great advantage that, while making a picture  $1\frac{3}{4}$  inches in diameter, it can be carried in the vest pocket. It is in the shape of a watch, and is in fact, a camera in a



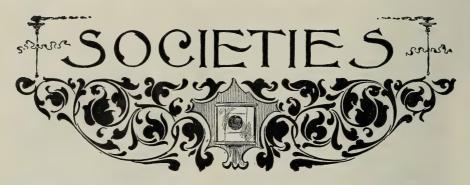


watch case. When closed, it has all the appearance of a handsomely nickeled watch. Pressure on the stem-winder throws down one side and reveals a camera, fitted with time and instantaneous shutter. Opening the back, a rim is exposed on which is fitted the film-holder. The shutter being set and slide withdrawn, exposure is made by pressure on a small button. The holder is removed, the front of the camera pushed in, the two sides closed, and a compact, unbreakable "watch" may be slipped into the pocket. For bicyclists and tourists it should prove invaluable. In our hands it has proved very successful. The cuts show the instrument both closed and open; the size of the camera being a little more than twice that of the cut.

For details as to price we refer our readers to our advertising columns.

WE learn that B. L. H. Dabbs, of Pittsburgh, Pa., lost four hundred and twenty-five negatives in the recent fire at Benjamin & De Lisle's establishment at Cincinnati. This is the second loss by fire that Mr. Dabbs has sustained since last November.

All communications for the September issue should be in our hands on or before August 18th.



Photographic Society of Japan.—At the June meeting Mr. K. Ogura, who had recently returned from China, where, during the recent war, he had been official photographer to the Japanese army, showed some interesting photographs. Mr. W. K. Burton showed a machine, designed by Professor John Milne, F. R. S., for photographing animals—or thieves—in the dark. The slightest pull on bait attached to a thread, or the touching of a stretched cord, ignited a quantity of flash powder, placed alongside a camera, and anything at the point of contact was photographed.

The Royal Photographic Society.—The fortieth annual exhibition of this Society will be inaugurated on Saturday, September 28th, by a private view, followed in the evening by a conversazione. Medals will be placed at the disposal of the judges for the artistic, scientific, or technical excellence of photographs, lanternslides, and transparencies, and for apparatus. Exhibitors who desire to do so may state whether they wish their exhibits to go before the judges in the Art or the Technical Section, or both.

Foreign exhibitors are invited to contribute. The Royal Society will provide frames or portfolios for approved photographs. There will be no charge for wall

space.

Exhibits must be sent carriage paid, and addressed to Secretary Royal Photographic Society, 12 Hanover Square, London, W., England. They should be delivered in London on or before September 24th.

A few entry forms may be obtained from the BULLETIN.

BRIDGEPORT PHOTOGRAPHIC EXHIBITION.—The second annual exhibition by local amateur photographers, and others, will be held in the Art Department of the Bridgeport (Conn.) Public Library, from September 21 to October 31, 1895. No charge for space, and no entry form necessary. No awards will be made. Full information may be obtained from the BULLETIN, or from W. J. Hills, Bridgeport Public Library, Conn.

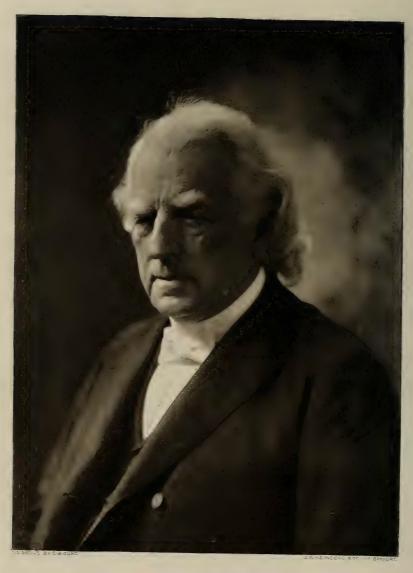
Photographers' Association of Kansas.—The Kansas Photographers have formed an organization to be known as the Photographers' Association of Kansas, and will hold their first convention in Wichita on October 1st and 2d. Much enthusiasm prevails and the meeting promises to be a very successful one. P. A. Miller, of Arkansas City, Kan., is the president and will give any information on the subject to those interested.

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# ANTHONY'S

# Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

VOL. XXVI.

SEPTEMBER, 1895.

No. o.

### RETOUCHING POSSIBILITIES.

THE professional photographer is naturally on the look out for time and labor-saving machines, and of those recently perfected and bearing on the subject of photography there are few that will interest him more than the various retouching devices. A piece of apparatus that will perform all the mechanical part of the work, while being

entirely under the guidance of the operator, is certainly a valuable auxiliary. Such a piece of apparatus is to be found in the electric retouching device designed by Mr. A. S. Harry. This instrument gives the most delicate stipple. and is entirely subservient to the will of the operator. It is not for one moment to be imagined that any device will yield perfectly retouched negatives when worked by a novice at retouching. A knowledge of what is wanted and of the methods of producing desired effects is as essential



Egg and nest worked in on negative.

as when working by hand. But with such a device the whole attention may be given to mastering the very necessary principles, and the saving of time and labor are factors of no mean importance.

The average photographer finds it necessary, especially in dull times, to do his own retouching. With such a device as this, and with a good general knowledge of what is wanted, really first-class retouching may be done with but little experience. The advantages of such a

retouching device, as regards quality of work and speed of working, should be touched upon. A beginner can do really good work and will master the art in about one-fourth the time that would be found necessary when working by hand alone. The device furnishes the touch, one of the most difficult things to acquire, and will give a delicate stipple, or so smooth a retouching that a solar print made from the negative will not show grain. For blending it entirely eclipses hand work.

The retoucher having nothing to do save guide the pencil point, can have a much better conception of the work before him, and can produce effects that would be practically impossible if hampered by being obliged to force the pencil forward and back for each successive stroke.





Showing the making of new coat. Part of work done on negative, then on a transparency, and finally touched up on second negative.

In the older forms of retouching devices the handpiece was somewhat clumsy; but in the one we are considering it weighs only 14 ounces, and is so artistically shaped that holding it in the hand is less tiresome than having the hand cramped by holding the ordinary pencil. The long slender pencil holder permits an almost unobstructed view of the work in hand.

With regard to rapidity, electricians who have tested the device for speed and reliability claim that it makes about 2,500 strokes per minute. We have described this instrument somewhat enthusiastically, and this because personal experiment has demonstrated to us its intrinsic value to both professional and amateur photographers. Radical advances in methods and apparatus call for discussion, and in the line of retouching devices a really good and efficient article should be welcomed. Time was when a retoucher was somewhat of a rarity,

and indeed, it is not so very many years ago when a prominent photographer made a life contract with a retoucher to retouch his negatives for \$1 each. The photographer looked upon the retoucher as something approximating a freak, as one of Nature's wonders, to be appreciated and made much of. Within the past few years retouchers have multiplied at an enormous rate, both sexes competing, cutting prices, and in many cases turning out work which, while it passed muster, could hardly bring credit on the profession. With the introduction of these devices has come a demand for something better, for the work that is being turned out by them is of such a high quality that the general standard is being raised.

The amateur photographer is often a portraitist of ability, and would prefer to retouch his own negatives, as he can then give to them the time and attention that he feels they merit. With an electric device to furnish the necessary touch, he should quickly master the principles underlying the art of retouching.



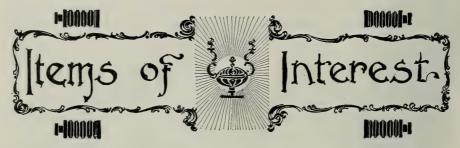


Showing furbishing up of coat and addition of collar, tie and shirt-front.

Instead of resorting to retouching at all, defects in the face may be largely broken up and rendered invisible by photographing through a lined or stippled plate, placed in contact with the sensitive plate. While this method will never do away with the necessity for retouching, it is well worthy the consideration of our readers.

The possibilities of retouching are greatly increased by the introduction of such devices as we have alluded to. The extent to which retouching may be carried and the effects that may be produced by the skilled retoucher, are well illustrated in the half-tone reproductions scattered throughout this issue of the Bulletin. They are the work of Mr. W. H. Erskine, who for the past ten years has carried off prizes all over the country for his work. For the last eight years he has devoted himself to the art of retouching, and is known as one of the finest retouchers in the States.

The illustrations will, we think, be interesting to all of our readers.



WE have received from W. P. Buchanan an exquisite booklet, in which his celebrated cat, Grover B., figures largely. We would advise our readers to write for a copy of this, for it is daintily gotten up.

Carbon tissue, cut to the following sizes,  $4 \times 5$ ,  $5 \times 8$ ,  $6\frac{1}{2} \times 8\frac{1}{2}$ , may now be obtained in dozen packages. Hitherto the product of the Auto-





Boy being dead, and only photograph being one in a group, cap was removed and hand put in pocket.

Background worked in with Strauss Marl.

type Company has only been obtainable in this country in complete bands. The issuance of this tissue in small sizes will doubtless lead to a more extended use of the process. Warm black and sepia are the colors obtainable in these cut sizes.

In his presidential address to the Photographers' Convention of the United Kingdom, Mr. A. Haddon spoke of the advances that had been

made in the branches of sciences that were connected with photography. "Aluminium has of late years been used in connection with photographic apparatus, and is gradually displacing brass and other metals where lightness is to be considered. It is used instead of brass for binding together more rigidly than can be done by means of wood alone the different parts of cameras; for the tops of tripods and for the legs; for lens mounts, and for a variety of other apparatus. Its great

advantage is its lightness, but at the same time in its unalloyed condition it has serious drawbacks. It. oxidizes rapidly, is easily bent, and will not stand a great strain. When associated with 6 per cent. of copper it is considerably increased in toughness and tensile strength. This alloy can be doubled over and hammered at the



Boy originally on rug. House put in with Strauss Marl.

bend without cracking." Mr. Haddon spoke of a company that is about to be formed in Great Britain. It is proposed to prepare the salts from which the metal is to be extracted from bauxite, which is plentiful in Ireland, then to convey the materials to Scotland, where, taking advantage of the energy stored up in the water-falls, to drive dynamos, and then by means of the electric furnace to reduce the metal from the salts.

Speaking of acetylene, he said that it had undoubtedly a great future before it, if properly applied. When burned at the rate of 5 cubic feet an hour it yields a light equivalent to two hundred and forty candles, the same volume of ordinary London coal gas yielding only sixteen candles. It will not give, however, when diluted with coal gas or hydrogen, an amount of light in proportion to the acetylene present in the mixture.

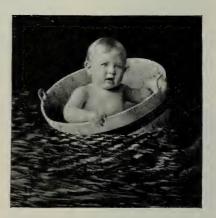
ANOTHER of the oldest and best known photographers in this country, Frank Forshew, died on July 31st, after a few days' illness. Mr. Forshew was born in Hudson, New York, and had been over forty years behind the camera when he retired. Before the war Mr. Forshew made most of the pictures of prominent Americans that appear on the old State bank notes.

REV. F. C. LAMBERT regards the appropriate name or title for a picture as being by no means unimportant. He says: "Let the name or title be truly appropriate; try as far as possible, in reason or consistency, to avoid using titles or quotations that are too familiar, or that

are associated with some well-known work of art; let your title have the poetic rather than the prosaic view of the matter, sentimental rather than comic."

W. D. Farrington suggests that an exhibition of photographs valuable not from an artistic point of view, but because of their novelty and general interesting character, would awaken considerable interest. For instance, a series of pictures made by Peary, while only moderately good as photographs, were of immense interest. There are hundreds of pictures of the greatest value and interest that the public never see





Shirt etched off and hand supplied. All etched on the negative.

at exhibitions, because they are not technically or artistically excellent. A class in exhibitions wherein the various out-of-the-way pictures could be shown in their best light, and not overshadowed by the more beautiful, if less interesting, prints, would bring out a lot of real good and valuable material.

"Remember the focus of your lens; examine all the little things before you expose; let what you do be from head to foot your best."—EDWARD L. WILSON.

H. P. Robinson will act as President of the Photographic Convention of the United Kingdom for 1896.

A German patent on a new photographic paper has recently been published. This paper is intended to be used for such purposes as architects' plans and drawings, to be used, indeed, instead of blue paper. The formula given is as follows:

Ammonio-citrate of iron	80 to 100 parts.
Silver nitrate	12 to 20 ''
Tartaric acid	15 to 20 "
Gelatine	10 to 15 "
Water	1,000 "

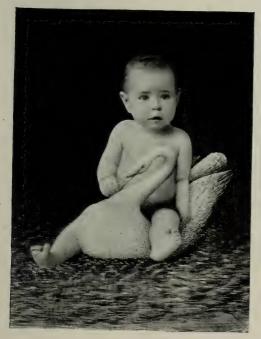
After printing, the paper simply requires washing in water. It is said to be very sensitive to light and to give a brown image on a white ground.

THE Photogram, speaking on the subject of photographic societies,

says: "There is a general uneasy feeling in the two great branches of the Englishspeaking world that photographic societies have seen their best days," and then notes that camera and plate makers are deluged with orders. We have ourselves noted that the interest in photographic societies is on the wane, and when the general methods adopted by these societies is subjected to quiet investigation, it is not to be wondered at that the enthusiastic beginner soon tires of "society life." The older members, in many cases, seem to look upon the society rooms as good lounging places, and the active members—that is, those who have a real desire to advance photography and



From original negative.



From etched negative.

to increase their knowledge of the art—have but little sympathy with those whose ambitions seldom rise above smoking concerts and the like. Again, the exhibition feature is one that has had much to do with the decadence of photographic societies. It is simply ridiculous to the intelligent photographer to hold open exhibitions and to submit photographs to one or more The beginner, in judges. some cases that we can call to mind, is a better authority on photographs than the judge, and under any circumstance the awards are more or less unjust. In some of the best societies in this country the average attendance, out

of a membership of three or four hundred, is about thirty, and this at

meetings that have been specially announced. It is true that lanternslide evenings are sources of attraction, but then there are no prizes



Child originally on fur rug. Basket etched in on negative. considerable room for improvement in all photographic societies.

awarded. If annual exhibitions were held and the competitive features were omitted, and if it were fully understood that the society existed for the spread and advancement of the science and art of photography, if cliques were impossible, and if new members were made to feel that they had equal rights with others, the outlook for photographic societies might not be so bad. The average photographer, too, does not care to listen to lectures on mathematics, unless he is occasionally treated to a discourse on subjects of greater value to him, as bearing more directly upon the work on which he is engaged. It seems to us that there is

THE amateur photographer experiences no little difficulty in properly washing his prints, and in a great many cases faded vellow pictures are due to failure to remove all of the hypo. Expensive washing tanks are not within the amateur's means, and indeed, anything that is bulky cannot be used. The arrangement shown in the accompanying cut will, however, answer all requirements. A perforated rod, bent at right angles, is connected with a faucet, and used in an ordinary dish. In this way prints may be thoroughly washed in about two hours.



INTENDING contributors to the eighth volume of "The International Annual" should send in their articles at once.

All communications for the October issue of the Bulletin must be in our hands on or before September 18th.



#### PHOTOGRAPHY IN LIQUID AIR.

A LITTLE time ago I described in these pages how Professor Dewar in conjunction with Captain Abney has begun a series of experiments upon the action of light upon bromo-iodide gelatine plates while the plates were immersed either in liquid air or in liquid oxygen. The plates were still somewhat sensitive to light at such low temperatures, to the surprise of Professor Dewar, who had supposed that at such intense degrees of cold all chemical action ceased. In their further

experiments, which sooner or later will be published by Professor Dewar, they are trying how much photographic sensitiveness is reduced by the measured application of intermediate degrees of cold, in the hope of obtaining a curve falling off gradually in the direction of the absolute zero of temperature, somewhat as the electrical conductivity of different metals approaches each other at the temperature of liquid air, and points in the direction of all metals being equally good conductors of electricity at the absolute zero of temperature. He pointed out in a Royal Institution lecture at the close of the recent session at midsummer, that although a diamond at a moderate red heat will be extin-



W. H. ERSKINE.

guished by the cold when dropped into liquid oxygen, and will fall to the bottom of the vessel, yet if it first have more energy put into it to be enabled to do battle with the cold by being made extra hot by the application of a blow-pipe flame, it will continue to burn, despite its weight, on the surface of the liquid oxygen, making the latter look

milky by the solid carbonic acid it takes up from the combustion. This experiment was quite new and had never been shown in public before. Ozone is abundantly liberated during the combustion of the diamond or of graphite in liquid oxygen.

At his last lecture of the session the Duchess of Albany and some other members of the royal family were present, so he rapidly went through a few of his more striking experiments of the past to give a general idea of the whole range of phenomena presented at these low temperatures. One phenomenon, however, was shown in public for the first time, namely, the solidification of bromine. A heart-shaped glass globe was filled inside with ordinary brown vapor of bromine, and an outside depression was filled with liquid oxygen applied by means of a piece of cotton-wool at the end of a stick dipped in that liquid. The cold of the oxygen caused the bromine to condense on the upper part of the globe, and to become a brilliant red mass like red sealing wax, and not at all brown. The same amount of cold causes red iodide of mercury to change to light yellow. Another entirely new experiment shown at this lecture was to cause a small jet of ignited hydrogen to burn below the surface of liquid oxygen, which experiment he said requires to be performed with care. No ice was deposited anywhere from the combustion, but the water formed went off as a kind of smoke, or, as he called it, "fume." W. H. HARRISON.

## METHOD IN PHOTOGRAPHY.\*

THERE is no vocation under the sun wherein system is such a necessary factor as it is in photography. The very art is based on chemistry, which is a science of fixed laws. Allied to this we have all the details of a commercial venture, which must be conducted upon strict principles in order to attain its proper aim. As a counterfoil to these, we have the artistic end of the line, which is an enemy of both the others, for the artist is ever a dreamer, either too good for this earth if his art has demoralized him, or too far above it, if the art within him is really true, for him to descend to the plane of his fellow-men. With these conflicting points I shall not deal, but rather confine myself to the subject of method in the business, and, by presenting certain facts, bring about a realization of the importance of conducting every branch of it upon a systematic basis. If there is any one thing more than another that the public is interested in, it is a pretty picture. Hence, the first aim of every photographer should be to use method in the display at the entrance to his gallery, changing it frequently, and placing his very best work where it will catch the eyes of the passer-by. No one can estimate the trade that such exhibits would ultimately bring in, or how many vacillating souls might be converted thereby. Yet, in the face of such sound argument, have I frequently seen prints so yellow that they might be used as a substitute for saffron in a dye-house. Once before I alluded to this same subject, and a very estimable gen-

<sup>\*</sup> Read before the Photographers' Association of Ohio.

tleman, whose friendship I value very highly, saw me enter his gallery shortly afterwards, and at once exclaimed: "I suppose you noticed my show-case as you came up-stairs, and saw the prints were not changed. Really I meant to have them changed the very next day, but business prevented!" Had I spoken out what I thought I might have asked if that exhibit had not prevented business, but I didn't have the heart to say it. The best way to keep customers away from a gallery is to have a dirty entrance. I really never could understand why the average photographer uses so little method in his cleanliness, with stairs that have not seen soap and water for months, grimy side walls that even an Indian would be afraid to touch. It is no wonder that the people draw the line between such places and the ones that are conducted properly. When I see a neat show-case and a clean entrance, I know what to expect when I get up-stairs, and I am very seldom disappointed. There will be nicely framed pictures on the walls, the curtains will be white, the windows clean, the show-case polished. There will be no holes in the carpet for you to stumble over, or, if there are, a nice rug will cover all that, and at a small expense, too. When I strike the reverse, I always expect to find a room with a big piece knocked out of the ceiling, or else the proprietor either wearing a soiled collar, or else in possession of a pair of pyro-stained hands that must offer a very pretty contrast to the pictures he hands out to his lady customers! First impressions are very apt to be lasting ones, and hence I cannot too strongly emphasize this point of cleanliness in the reception room, for it is an index to the whole establishment. I never saw a photographer yet who would not almost faint if he had his dinner served upon an unwashed breakfast plate. And yet there are hundreds of galleries throughout the land to-day which have been presenting for years the same dirty floors, mouldy walls and dust-stained ceilings, while their owners are wondering why the public are no longer interested in them. Were I conducting a gallery, it would be so clean that I could and would escort favored customers through it, and thus utilize it, not only as a place of business, but as an educator as well. Method in the treatment of customers is also of the utmost importance in every gallery. It does not do to discriminate in a crowd, and make the man you salute with "Hello, Bill!" feel as if he was a welcome guest, while the stranger receives the punctilious bow and the cut-and-dried, "What can I can do for you, sir?" It is, of course, not every day that one gets a crowd in these times, but "golden days are approaching," to quote the words of a very good friend of mine.

To revert, true courtesy will always receive its reward, and ladies ever demand and are entitled to respect and attention. We all know of the little lock of hair that always shows in the wrong place and makes a resitting necessary. It is useless to fight against that little lock of hair and tell the sitter that it was there when the picture was taken, which it really was. Better make one negative over again than lose, perhaps, two new customers that a single satisfied one would bring.

There are so many methods used in the conduct of our business, and of so many divers aims and tendencies, that they are sufficient for an

article in themselves. Flattery, that most insidious of all persuaders, plays a most unimportant part in the game, and can truthfully be proclaimed as the most hazardous ground ever trodden by any photographer. Ill temper will drive away more customers than anything else, while broken promises mean sure death. To succeed, one must ever strive to win the confidence of his patrons, precisely the same as any good business firm holds its trade. Thus, I've always wondered what a certain photographer was going to do to extricate himself when a little girl entered that gallery while I was there, and, returning a proof, said: "Mamma says the likeness is very good, but when you make the pictures please have the face turned the other way!" The man said he would, and he lives in my own State, too!

Under the skylight it is very necessary to be so pleasant that every sitter will feel at home at once. You cannot make good pictures of people who look dissatisfied, frightened or constrained. In an old gallery I once saw the photographer conduct a stout old lady into the operating room, bid her be seated, and then make a wild lunge for her with both hands just as she was about to sit down. I thought for the moment that the man was actuated by a sudden frenzy of love for the stout old lady. The next second I heard him say: "I beg your pardon; I forgot to tell you that one of the legs of that chair is split, and you must be careful when you sit down!" And she was careful, I can assure you; but I have always been anxious to see a finished picture of her in order that I might note her expression. As a foil to this, I leave to your imagination the expression on the face of a prominent Indiana photographer, who had succeeded, after a deal of persuasion, in getting a certain Hebrew merchant to have a combination picture made of his little boy. He was just emerging from the darkroom with his plate-holder when he overheard the old man say to his son: "For the love o' God, Ikey, don't move! Dose pictures cost your fader \$9 a dozen! Stand still, my child; stand still!" The boy never moved, and that picture certainly was a success.

The operating-room should always have enough in it to make it attractive. A few framed prints, a large plant or two that certainly would flourish there almost unheeded, a few odd rugs and comfortable chairs, would add an artistic air of refinement that could not but be appreciated by the stranger and commented upon afterwards as a most desirable innovation. The day is passed when a photographer can excite astonishment and win his reputation by tumbling down a soapbox, throwing a mouldy tarpaulin over it and placing the innocent child therein, produce a picture of papa's first and best, seated on a real rock. In plain English, make away with the trash that defiles so many galleries and is such an eyesore to every one who gazes upon these prehistoric relics. Burn them up, cut them up, do what you will, only get rid of them.

When you enter the darkroom of many establishments you must prepare for surprises. The funniest part of it all is that you never know whence these surprises are to come, or just exactly what they are to consist of. Thus, I remember a certain party who once asked



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me to turn to the right as I entered his darkroom; and I did so with most disastrous results. There happened to be an old camera there, for what purpose I never could quite understand; and on the other side a collection of empty boxes and large negatives. Where I couldn't kick holes in the boxes, I certainly succeeded with the negatives; and I have money to wager that the camera had to have a new bellows before it could ever again be of any practical use. The whole trouble arose from the fact that when the photographer said "turn to the right," he really meant "turn to the left;" but I wasn't a mindreader in those days.

A darkroom should be just as respectable and orderly as a reception room, and there is no reason why it should ever be different. this necessary adjunct of our business, or profession, is usually the first place to which any person in the same line is conducted, I can truthfully say that I have simply been astounded at the conglomeration of articles I have seen in them, ranging from old shoes and cast-off clothing into tin cans, empty bottles, chemicals in bottles, chemicals in bulk, chemicals lying loose, chemicals on the floor and in every other place where they ought not to be, and so on, into liniments, cough medicines and, yea, even into the amber-colored fluid with which some photographers are wont to toy, but which I've always been afraid to touch in those places for fear it might be an old pyro stock solution. Really, there is no excuse for all this. Method is as absolutely necessary in the darkroom as elsewhere. There is always some nook or corner where the stock of chemicals can be neatly stored, properly labeled and ready for use. The darkroom is no place for them. All you need there is what is absolutely necessary to develop and fix your plates with, and nothing more save the plates you use. Even these latter should be limited in quantity so as to be just sufficient for one's needs, for no plate on earth was ever made, or ever will be made, that will stand the damp, humid air of such a place as that in which you would not work a second were it not impossible for you to evade it.

When we enter the printing room we are appalled with what we usually behold. The floor is littered up with old paper, negatives are piled around in reckless confusion and in a manner not only absolutely devoid of any system, but with an utter disregard of the fact that dust does not improve them. Printing frames surround you on all sides, right and left, top and bottom; some are clean—but not often—others grimy and dirty that they give you the horrors to touch them. I have in my mind's-eye a certain gallery in New England where the printing room is ever devoid of a scrap of paper or a spoiled print.

Really, now, isn't it less trouble to throw the scraps into some receptacle and thus get rid of them at once than to cast them on the floor and then have to devote good time to sweeping them up again? As plates come to the photographer packed in nice, clean boxes, why should they not go back into the same containers after they are finished? If they survived time in that condition when in an unfinished state, would they not keep indefinitely when chemistry had completed its allotted task?

In every branch of our business we need method, and in none to a greater extent than in the matter of economy. More money can be wasted in a gallery than is ever made. I have gone the length and breadth of this land and seen thousands of card mounts that never saw a print, yet are useless. Where the waste is elsewhere, even the imagination stops. In large establishments the money needed to employ a regular stock clerk who would be held accountable for his trust would pay a golden interest.

On the other hand, the smaller man who cannot afford a dollar or two for the wood necessary for a closet had better get out of the profession, for he can never hope to succeed in it when he is wasteful.

Method is what we want everywhere. Photography is branching out into side lines, gift enterprises, even babies' days, so that we can hope to expect, from present indications, something like—"On Monday a special drive in Paris panels—better value for the money than ever before offered." While I am strictly in favor of confining the business within its legitimate bounds, I cannot but admire the enterprise of a Nova Scotia photographer, who advertises: "Babies reduced to \$2 per dozen."

What we want is method. Work should be turned out when promised. Cloudy days will ever come, but they have never yet arrived with the precision that photographers lay claim to. Let the business be methodical—work it on the same basis as other businesses are conducted, and the rain will be in the shape of something tangible.

What we want is method!

WILLIAM F. MILLER.

## THE ONE THING.\*

YOU have my apology for committing to paper what I have to say, in this: That I wish to be understood and fear I might not were I to try to talk without.

If in this short paper, I shall interest and instruct, by bringing before you clearly the main idea, I shall feel that I have written to some purpose. I promise I shall not be tedious. In casting about for a subject, I asked myself what will be most practical? Most useful? Is there one thing to be desired more than another? Is there anything paramount?

Christ, the great teacher, said: "There is one thing needful and Mary hath chosen the better part." The world, especially the thinking world, is fast coming to know that the only life of worth is the altruistic one; the true form of life, that only which is real and enduring, which is far above the material or animal life, and so far transcends the physical that without it the latter would not be worth the living.

Time is proving this utterance of the Great Teacher to be a living truth, in which he would have us know "that this one needful thing" is the only real thing, and so it is with all the affairs of men. Take out of them the "one thing," the essential feature, and they at once become

so much useless material. I ask, then, have we chosen the better part? Do we put into our work the essential feature? That which shall endure? If not, it surely will fall short of the mark.

What, then, may I ask is this essential feature—the one thing needful? In the midst of our struggle with the conglomerate of plates and pyro, paper and silver, carbon and gelatine, cameras, lenses and backgrounds, rests and accessories and what not, there comes to us a sort of bewilderment from which at times we look up and ask: What is it? What are we striving for? Do we know? It cannot be money, for he who makes that his aim only, gets it. No! not that, our inner natures strive for something better, something higher. The course laid down for us by our Maker is ever an upward one, and if we go not that way, unrest and discontent is ours.

This aspiration, which always looks up, and will never be satisfied by mere material, is heavenborn, and is to be found in the hearts of all men who will never be content until the goal is reached. Year after year we come to our conventions but to go away again deeply feeling our poverty and want, feeling unsatisfied and that there is but little we have learned, while many of us go home again to become nothing more than mere plagiarists. We cannot of ourselves do anything only just what we have seen that others have done. In fact we have not gotten the idea. We have missed the "needful thing" and so we cannot be original. We cannot create, and creation is the expression of a thought, the giving to it a form. 'Tis the result of the domination of the mind over material. Not the production of elements, not the making of matter, but simply the use of such things to show what is in the mind. And in all the universe of God we but behold the thought of the divine mind.

Just so our Creator has given to us a mind and placed at our disposal the elements, the material, and says to us, "Create!" He also says, "Look on my work, here is your pattern!"

With material in abundance and patterns of such endless variety, what then do we lack? What do we need? Thought! Thought !! Thought and observation! Not so much of what each other is doing, only in so far as it may aid us in thinking for ourselves; but observation of the countless and varied beauties the Creator has spread out before us.

To my mind no one aside from the artist, with brush and palette, or the sculptor with clay and tools, can come nearer to a creator than can the photographer—if he will. But what is to be the order of his creations? What can they be but the production of his own thought?

You show me a man's productions and I will show you his mind. Now, in order to get that which is best in photographic attainments there must be that which is purest and most noble in mind and thought. He who lives only in the material world will produce a very low order of photography. He whose life panders to lust and passion will make pictures of that order. He cannot in his productions rise above his own thoughts. If they trail in the mud, dirt will glare from his work, and so long as we grovel and hunt among the lower things, so long as we try to satisfy with the material, so long shall we be disappointed.

No, no, brother, the things you are looking for are not down there, they are up there; in the realm of thought only are they to be found.

We talk a great deal about "Art," "Art in Photography," and are wont to style ourselves "artists." Art in photography means thought in photography. "Art," like "a creation," is but the expression of a thought, and works of art after all are but the "creations" of men. How much, then, has material to do with it?

Do you ever stop to think that the poorest and most miserable photograph contains just as good material as the most beautiful and ennobling one has?

What makes the difference? The mind of its creator.

Last year our President asked me to tell how I made my work. "Tell us something about carbons," said he, and this year comes the same call again. Why, bless you, friends, carbons are not pictures. Do you know what dirty, miserable black stuff carbon is? Last year I tried as best I could in a few words to tell something about picturemaking; but I must have sadly missed the mark, for shortly afterward I saw a garbled account of what I said twisted out of all semblance and made to answer the purpose of an "ad" of "something that was said to be equal to a carbon." Ridiculous! Pictures are not material. "Paste it in your hat." They are not material. They come from a higher source. Any one who has had the pleasure of visiting our Soldiers' Home at Dayton will bear me out in the statement that it is one of the most beautiful spots on earth. Often as one may visit there, they never tire of the place. At every turn new beauties spread themselves out before you. At each new point new surprises await you. Now, what makes it so? The trees are just like others; the grass no greener; the flowers no brighter; the lakes no purer, nor the heavens more blue. Nor is the architecture so grand as others. What makes it? Mind! Thought! The whole thing is a scheme in which every lawn, tree, flower, shrub, building, lake and fountain fall into place as though by chance, and yet it is all the thought and plan of a masterful mind.

What is the one thing needful? Thought; and the higher the thought, the better the work. Show me a picture that tells of study—careful, intelligent study—one in which the lights and shadows sustain their proper relation to each other, and where pose is suggestive of refinement and grace; that which appeals to all that is good and pure in me, and I care not whether it be made of carbon, sulphate of baryta or brickdust, it will always remain a source of pleasure.

What we need, brothers, is a higher conception of beauty and the eternal rules and principles governing better and cleaner lives, living that does not cloud or muddy the brain; then a closer application to the study of art principles and rules, an education and training of the mind, eye and heart, so that we can see, so that we shall be able to recognize it when we have gotten it, and cameras and photo materials will willingly become our servants and do our bidding.

Take a glance with me back over the past into the palmy days of



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ENGRAVED BY A. ZEESE & SONS

THE TEST.

LIBRARY OF THE UNIVERSITY OF ILLINOIS collodion and albumen, and, from the material point of view, was there much more to be desired? With all the changes has there been much advance made?—technically, I mean. I fear not. What, then, is the trouble?

I will tell you. We have been kneading and kneading with our hands, and have not used our brains. We lean on the very sensitive dry plate, and expect it to do our thinking. We depend upon the ever-ready sensitive paper, expecting it to respond to a material call. No, no, brothers, this wont do. We must think, think, think. Then let us come up next year prepared to show some of the results of our thinking. The materials are all right. We go lame only in our minds. See, then, that we find out!

Study out "the one thing needful," and "choose that better part!"

J. M. Appleton.

#### ON PICTORIAL PHOTOGRAPHY.-THE OLD AND THE NEW.

THE difference in the practice of pictorial photography of to-day compared with that of, at the outside, ten years ago, is a radical one; that is, if I may be allowed to take as my standpoint the pictures exhibited at such an exhibition as the Photographic Salon at the Dudley Gallery, which is avowedly devoted to pictorial photography only. And I think I am justified in taking this exhibition as typical of photographic art at the present time, because the members of the society by which it is organized, who are responsible for the selection of the exhibits, include among them a very large number (if, indeed, it might not be justifiable to say more than this) of the most prominent names in that part of photography which we have now to consider. Be this, however, as it may, it is to the influence which has been exercised by leading men at this exhibition and the consequent result upon pictorial photography in general that I wish my remarks to apply. At the same time I am well aware that in the vast fields covered by photography the influence cannot as yet be said to have extended universally. Even among the important body of photographers which I am now addressing, there may be some, if not, indeed, many, who may be quite unaware of the differences to which I shall allude. It is a factthough somewhat a humiliating one—that the movement in the photographic world, the discussions and combats, literature, the exhibitions, and the names and work of our greatest exhibitors are not so widely and generally known as we sometimes fondly suppose them to be; not that they do not deserve so to be, but the world is large and the photographic microcosm, after all, but a small portion of it. Even among photographers themselves-and by these I mean all who go about armed with a camera of one sort or another-it is astonishing how restricted is the knowledge of men and doings, which, to some of us, are of the very highest importance. On a vessel in which I lately made a voyage of some weeks' duration there were no less than fifteen cameras among the passengers; but, to my surprise, not one among them had ever visited, or, I think, even heard of, the Dudley Gallery Salon, or the exhibition of the Photographic Society, or had more than the vaguest idea that there existed some kind of journalism devoted to photography. I am obliged to make this early digression with a view of deprecating the feeling which may possibly exist, even among members of the Photographic Convention of the United Kingdom, that I am speaking to them of wholly imaginary things. But I think I am right in saying that there is a radical difference between pictorial photography as we now-a-days strive to exercise it and that which answered to, or was considered to be, the same thing so little time ago as, say, eight or ten years. Artistic photography was then the term most generally used, because it was necessary to be assertive.

<sup>\*</sup> Paper read before the Photographic Convention of the United Kingdom.

avoid the expression when I can, and we will assume that it is to be taken for granted.

Well, it may be said in general terms, that the older style consisted in the production of what is called a perfect negative, from which a skilled mechanical printer could make any number of absolutely similar prints. The newer method implies, in a great measure, a greater freedom or latitude in the printing frame, that is to say, in work done after the completion of the negative. Negatives are produced from which the most skilled printer could make nothing; at any rate, what he would turn out would be very different from that which would be, as it may be said, adopted by the artist who had a particular effect in view. Of course, the term perfect negative is a relative one. The only true perfect negative is that one which is fitted to produce the feeling of the artist, and it may be technically as bad as possible. Sometimes, in fact, the original negative is not used, but is transformed into something else.

Pictorial photography, as it was, consisted in the use of a technically perfect negative, which produced as a print a uniform result or effect. As our ideas are now tending, the result is obtained by modifications of all kinds—by alteration and suppression—but, in order to keep the photographic character, by never adding any absolutely new matter.

In the earlier days the attention of every photographer was directed, in a more especial manner, towards discovering and utilizing the technical range and limits of his craft. He was satisfied with the marvels which he produced by purely mechanical means, and, if the results appeared to him to be pictorial, it never entered into his mind to inquire whether or not art and mechanism might or might not be compatible. He allowed himself to be hampered by supposed necessities or desiderata, and considered as absolute defects what we look upon now-a-days as advantages. In those times he was content to reproduce what he found, or what he placed, in front of his camera in a conventionally stereotyped fashion, a willing slave to chemical and optical laws, which he had no desire to divert from their fixed path. For him the application of scientific marvels overshadowed everything else; the work of his darkroom was paramount in interest. Alchemist, chemist, or magician, he was a little of all these, and the triumph of triumphs to be achieved was the production of the perfect negative-clear, clean, brilliant, sharp, graduated in perfect steps from black to white—a thing of beauty in itself alone. The work of creation was accomplished when a print of equal vigor was the result, and there was but one method by which this was to be done, but one pattern to be made which should never differ from its fellows:

There was little or no scope for originality which was hampered by such restrictions, an inflexible regularity allowed no play to the individual. A monotonous level, limited to one standard for good or bad, resulted at our exhibitions, until in time the inevitable revolt arrived, Then, indeed, the purist and the rigid methodists cried scandal, and laughed aloud in their scorn; but the first sensation of righteous horror at an impious disregard of tradition and dogmatic teaching having abated, the pioneers of "the new movement" obtained at least a hearing and a following. What was most of all derided at first has become, in fact, a principle which is now little short of absolute law.

It is true, but a very few years back, to say that the characteristic of a photograph was such and such. This was easy to define; it was a fixed and apparently an immovable characteristic. But that no longer exists, and it has become, on the contrary, at certain of our exhibitions the fashion to look for the unexpected, for something which will reveal new capabilities and new possibilities in photography, rather than for the monotonous and decorous level of excellence which obtained for for so long a time.

I have said that the characteristic of the older style of pictorial photography was the production of a perfect negative. Accepting this term as expressing one of the highest technical excellence—a standard which might be set by a man of science without any reference to other qualities—it may be said that the characteristic of the newer methods is the art of making spoilt or imperfect negatives. And truly a

very difficult art it is; a far more difficult one than even in the days of the greatest obstacles was that of producing the typical negative of perfection; immeasurably more so in these days, when our implements and material have been brought to the highest degree of excellence. The tendency in modern pictorial work is towards the alteration in every possible way of the results which the camera, used in the more mechanical fashion of days gone by, would produce. This alteration has been called faking, and I would now use the term handwork, were it not that the expression is one so liable to be misunderstood. But in any case I have no quarrel with the word faking, when not used derisively or in a derogatory sense. It is a method which we shall have to deal with more and more every day, and it is one which we shall have to accept. Retouching, or the alteration of the mechanical work of the lens, is the only door through which art can enter into photography. The question is, and will be, where the line is to be drawn; but, so long as you accept one kind, it is difficult to deny the right to use another. Has anyone yet, for instance, found fault with the use of a painted background, in a portrait studio, as unphotographic? And yet the moment a background is introduced or modified, say by the use of a brush, the outery is raised. I do not defend the use of brushwork on the print, but I defend, in every way, the use of any means to alter the negative from which the print is made, short of the introduction of absolutely new matter or form.

To return for a moment to the art of making spoilt negatives. The field opened up is enormous, for we may make them by defective focusing, by over or underexposure in the negative or print by movement of the camera or sitter, by using a pinhole or slit instead of a lens, by fogging the plate, and in numberless other ways. There was a picture by a prominent Salonist, which a distinguished scientific man said made him sick and giddy to look at; it was a spoilt negative because of the want of accurate definition. There was another of which some said that you could not tell whether they were onions or cabbage stalks in the foreground. It was a spoilt negative because it was badly focused. Again, one of the best photographic portraits I have ever seen owes a great deal to the movement of the sitter during a long exposure. And many other examples might be adduced. Take any one of them with the aim in view of imitating the absolute effect of the result, and you will discover the difficulty of making spoilt negatives, and the art there is in it. Take especially the case of the movement of the sitter. There is a character and softness obtained by it which you cannot get by any other means. It is one of the most difficult to exercise, and if you succeed in using it successfully, intelligently, I say you accomplish what is equivalent to good art, for which the machine is responsible only as a tool in your hands.

I will not go so far as to assert that the whole art of photography consists in producing prints differing from those which can be produced by the skilful scientific use of all the means which chemistry and optics accurately applied have placed in our hands, but I think the line which pictorial photography is taking is one wherein a great departure, at least from the old standard, will give us indications of personal control, of individual power, of original procedure, of variety and novelty, of the art craft, in fact, of the worker.

Should the older method, which keeps more steadily to the unities, be encouraged? Yes, certainly; but from a different point of view, and we have a not altogether dissimilar position in the case of exhibitions organized for the encouragement and improvement of racial characteristics in animals, fruit, flowers and vegetables. We have our Royal Agricultural Society and our Royal Botanical Society, and it is certainly of the greatest use to agriculture, to botany, and to fruit and flower culture that the most scientifically raised productious, however monstrous they may be, should be divided into classes and honored with medals for excellence, medals for progress, firsts, seconds and thirds, highly commended, and so on. But we all know that the prize pig or sheep, or the prize cabbage or carrot, the prize tulips or asparagus, even the prize grapes, however marvelous, are by no means the most excellent or palatable in themselves. Except for their special purpose they are almost useless, and the prize sheep is boiled down instead of being used as choice mutton. So, also, it is well that we should have exhibitions where medals should be

awarded and distinctions made, even to the highly commended limit, for the most successful applications of the prize photograph, only it should be perfectly understood that they are what they are—gross, unwholesome, brutal, the raw material, in fact the *ne plus ultra* of mechanical ingenuity. They should not pose as refined productions appealing to cultivated taste.

It may be argued that my simile may be applied against my advocacy of what I have called the art of making spoilt negatives; that these show, by their defects, a want of culture, which is as necessary in photography as in agriculture; but it is the culture of the heart which is required rather than that of the hard, unfeeling man of science, or the elaborate accuracy which distinguishes the mathematician. It is with such feelings that the advocacy of the softer methods of photographic printing, in contradistinction to the garish obtrusiveness of the cold mechanical aspect of the high polished surfaces which were at one time employed, has made so much way among us. It is the same feeling which has substituted a softer harmony for the minuteness of detail which was once so much the fashion. There is an admirable quality, no doubt, in accurate finish and mechanical precision, but there is another equally valuable, which appeals more strongly to the indolence of our sensuous natures in the rough and bold inaccuracy which is characteristic, for instance, of the art of the Eastern handicraftsman, and, more or less, perhaps of all our art crafts.

In the use of such expressions as the art of making spoilt negatives I have, perhaps, laid myself open to be misunderstood, and to have courted an easy and self-evident rejoinder; but, in what may appear to be an exaggeration of terms, there may yet be underlying a substratum of truth which is not too deep down for discovery. We shall not stand still in photography applied to pictorial art. We have begun to move, and one of the foremost among us who has watched, it may be said, the progress of art in photography from its cradle to our own time, has himself given the name "the new movement" to the present position. That, as I commenced by saying, there is a difference, and the difference a radical one, between pictorial photography, the new and the old, is certain. To have hinted at some of the features of both, and some only—for the field embraced is far too large a one to be covered at a stride—has been my purpose in the present paper.

Alfred Maskell.

#### INTERFERENCE COLOR PHOTOGRAPHY.\*

**6** 

In a paper read before another body a few weeks ago I gave particulars of the means by which photographs possessing colors due to interference could be obtained, and consequently do not propose to inflict upon you a repetition of the method to-night, more especially because I have on that point nothing new to relate. I propose to consider the results from a theoretical standpoint, and to discuss, rather, whether they fit in within any of the hypotheses in vogue.

Before doing that, however, I would allude to a point recently raised against my former paper in the editorial columns of the *British Journal of Photography*. The remarks made there are that the extremely fine emulsion "suggests a possibility which does not appear to have presented itself to him" (i. e., me), "that the transparency of the emulsion when it is poured on the glass is due to the fact that its constituents have not had sufficient time to enter into combination." So far from this view not having presented itself to me, not only did it occur to me at the outset, but it has been presented to me by almost every one who has discussed the matter with me since. It did not take long, however, to see that the idea, while plausible enough at the first glance, was entirely erroneous.

It is, to my mind, inconceivable that two such soluble salts as potassium bromide and silver nitrate, when mixed with gelatine and emulsified, can be coated in the form of extremely thin films and then washed in running water for some considerable time, and still remain in the film. Some must wash out, and I have looked for precip-

itated silver bromide in the washing water, but none was present. If this was probable, it would still be highly improbable that a similar emulsion could be precipitated with alcohol, washed in running water, remelted and coated, and still retain the original amounts of silver nitrate and potassium bromide in an uncombined condition. I think the *British Journal of Photography* should give us some parallel case or cases where anything in the remotest degree resembling this occurs before asking us to believe in such a phenomenon in this one instance. There are many chemical reactions which require an appreciable or even a prolonged length of time for their completion, but if this case could be one of those, the reaction would be prevented by the removal of most—in the presence of our president I dare not say all—of the salts by washing. As an additional proof, if any were required, I might point out that these films, if treated with solution of silver nitrate and developed without previous washing, fog, as might be expected, but if the silver nitrate bath be omitted, do not, although, according to the hypothesis, they contain free silver nitrate in both cases.

As far as the opacity or otherwise of the emulsion acting as a guide to the coarseness or otherwise of the deposit, I can only repeat that, whether it be a reliable one or not, it has in my hands invariably acted as a true indicator.

The theory of the formation of these photographs in colors has been set forth by M. G. Lippmann himself (Journal de Physique, Vol. 3, p. 97), and may be summarized as follows: The light falling upon the plate to a great extent passes through it to the reflecting surface of the mirror of mercury in contact with the sensitive surface, and is there reflected back upon itself. This reflection gives rise to interference phenomena in the sensitive medium, the result being the formation, in the case of monochromatic light, of a series of planes parallel with the face of the mirror in which the light is alternately at a maximum and at a minimum intensity. When the plate is developed we have a series of strata corresponding to these maxima and minima in which the deposit alternately is present and absent. When viewed, the deposit in such a film gives rise to interference, the result being that the color of the light which gave rise to the image is seen by the observer. While there can be no doubt that these colors are due to interference, for the only other suggestion I have heard made as to their nature—that they are green fog—is palpably absurd, so simple an explanation as M. Lippmann unfortunately does not account for, or even harmonize with, the facts of the case.

If this hypothesis is the correct one, that is, that the colors are due simply to the interference of light reflected from deposit in a series of planes, we ought, whether we view such a film from the back or from the front, to see the same color, but this is by no means the case. Sometimes, but rarely, my results have shown identical colors from both sides, but much more often than not these have been different—widely different; in some cases the spectrum order has been entirely reversed. I am at a loss to account for this on the simple theory first set forth.

Again, the influence of the duration of exposure upon the colors is peculiar. I show to-night two photographs of the spectrum, taken with sunlight exposures, differing, as nearly as I could judge, in the proportions of 1 to 5. That which had the shortest exposure is blue throughout almost its entire range; the other is nearly all yellowish green. This difference is shown, but to a much less extent, in the two photographs, Nos. 1 and 2, the exposures of which were twenty minutes and half an hour, respectively. Dr. Neuhauss has pointed out that with increased exposure the laminæ would get thicker and the distance between each one less, and that, on this supposition, the yellow should give place to green, green to blue, and so on; but this is precisely the opposite of what takes place, when the photographs are viewed from the glass side, although the hypothesis seems to be borne out when only the appearance on the film side is regarded. Still, as has just been mentioned, the colors on the film side being nearly always different from and frequently opposite to those seen from the glass side, and apparently rarely, if ever, even suggesting the color which fell upon that part of the plate during development, they cannot be considered in any way as confirming the theory as to their formation, although bearing it out as regards this alteration with exposure.

The explanation I would offer, as to the reason of the difference in color on viewing the two sides of the plate, is a simple one. When we regard the plate from the glass side we see the colors produced by the interference of the light reflected from a number of laminæ, formed, no doubt, in the way supposed by M. Lippmann. These laminæ, as they recede from the film surface and approach the glass, diminish in density, and consequently in reflecting power, since the interference which caused them grew feebler as they receded from the mercurial mirror; that being so, the most opaque of the strata is at the back, and we can examine the colors produced by a number of reflecting surfaces less opaque which lie upon it. When we look at the film from the film side, however, we see the most opaque deposit first, the feebler strata are covered up by it, and cannot, when it is at all dense, be seen at all. What color we perceive is due to interference between the lights reflected by this stratum and by the back surface of the film itself. In the case of short exposures, this film is a thin one; possibly the exposure has been so short that it is the only stratum existing in the film, or at any rate they are not numerous and are feeble. These are the photographs in which we see both sides of the film the same color. In the case of longer exposures this back film is thickened, and the color due to the interference of the light reflected from it and from the gelatine surface altered. That this is the case is shown by Dr. Neuhauss' experiment of removing some of the gelatine with leather dipped in alcohol, when the colors changed to those of shorter wave-length. This explanation appears to me to account for the difference in color of the same photograph viewed from its two sides.

The great stumbling block in the way of the production of photographs in colors by the process is and must always be the fact that the colors vary with varying exposures, since as such is the case it is quite easy to imagine some subject in which the relative intensities of two different colors is such that one of them is so much under or over-exposed as to produce the same color as the other. It is to this we must look as the cause for the failures which seem, judging from the paucity of specimens, to be most often met with.

One word upon a practical detail. I have not been able to succeed in intensifying any of my own results with mercury; that is to say, the result, after treatment with mercury bichloride, followed by ammonia, by sodium sulphite, and by ferrous oxalate, has been the same as before—no feebler and no brighter. On the other hand, I have been successful in every attempt in intensifying with silver nitrate, reduced by means of acid pyrogallol solution. If not carried too far, this renders them much brighter and more vigorous, but does not alter their tint perceptibly.

Mr. Wall has favored me with abstracts of two recent publications on the subject, to one of which, that of Dr. Neuhauss, I have already referred; these I will take the liberty, in conclusion, of reading.

# Les Couleurs et la Photographie. By Niewenglowski and Ernault, p. 284.

Quite recently, at the meeting on December 21, 1894, of the Société Française de Physique, M. G. Lippmann proved irrefutably, once for all, that his chromophotographic method is actually due to the formation of stationary waves. In fact, he has repeated in a very simple way the fundamental experiment of Otto Weiner of the interference of two luminous waves rectilinearly polarized crossing each other at right angles. He allowed a parallel beam of light to fall on a sensitive film, without grain and of ordinary thickness at an angle of 45 degrees. The plate was fixed, film outwards, on the hypothenuse of a right-angled isosceles triangle; the space between the prism and the plate was filled with benzine. The beam of light, falling normally on the incident face of the prism, underwent total reflection on the exterior surface of the film without needing a mercury mirror. As in the experiment of Weiner, the incident beam and the reflected interfered, but this time the beam was not monochromatic; a spectrum was formed. Moreover, it was previously polarized by traversing a Nicol prism, so that the sensitive plate received two spectra, side by side, the one arising from the beam of which the vibrations were parallel to the plane of incidence, the other of which the vibrations were in the plane of incidence. The first vibrations alone were capable of causing interference, and were therefore alone

capable of forming a photograph in colors. After development and fixing, one spectrum alone was colored—that arising from the beam polarized in the plane of incidence, in agreement with the ideas of Fresnel.

Die Photographie in Natürlichen Farben. By Neuhauss. Eder's "Jahrbuch," '95, p. 186.

He first points out that one of the conditions laid down for success is that the emulsion must be grainless, and that an emulsion prepared according to Lumière and Valenta's formula possesses a clearly visible grain before development, .0001 to .0003 mm. ( $=_{250000}$  inch to  $_{250000}$  inch), and as the half wave-length of light visible to the eye varies from .00019 to .00038 mm., the grain has approximately the same size as a half wave-length. After development the grain measures .0005 to .0015 mm., and he states that before development the grain can be very clearly discerned under the microscope with an oil immersion objective and side illumination.

Neuhauss also points out that with varying exposures varying colors are obtained, and the variation of color is in direct opposition to Zenker's and Wiener's theory, as the colors change from violet and blue to green, whereas it should be the other way, because one would assume that with longer exposures the intervals between the deposited layers of silver would get smaller, and should therefore reflect light of shorter wave-lengths.

Then, again, when one of these photographs in natural colors was rubbed with a leather dipped in alcohol, the colors changed; as the film was thus mechanically removed, light of shorter wave-length was reflected; thus red gave place to yellow. The contraction of the interstitial gelatine by the alcohol did not cause this, as, when the plate was laid in alcohol, no change of color took place. Neuhauss is, as you all probably know, one of the foremost authorities on micrography, and he points out that as we can resolve ampipleura pellucida into lines which are 0.00022 mm. apart, it would be possible, could a section be obtained of the film where red was reflected, to resolve this into layers, as they are only 0.00038 mm. apart.

After various suggestions and considerations, the author concludes by saying that these chromo-photographs are of two distinct kinds—one in which the colors can be seen from either film or glass side, the other only from the film side; the former he calls "Tiefenbilder," the latter "Oberflächenbilder," or body and surface pictures; the former only can be intensified with mercury and the latter cannot.

R. CHILD BAYLEY.

# PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

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A T the convention held in Detroit August 6th to 9th, it was decided to hold the 1896 meeting at Chautauqua, N. Y., the vote being Chautauqua, 161; Rochester, 23.

#### AWARDS.

Special Prize.—Silver cup for best illustration of a scene from Ella Wheeler Wilcox's poem, "Maurine." S. L. Stein, Milwaukee, Wis.

Genre Prize.—Diamond charm for best three pictures, 13 inches or more in size. S. L. Stein, Milwaukee, Wis.

Grand Prize.—Bronze figure piece for thirty-six pictures, twelve cabinets, twelve Paris panels, and 12 to 13-inch pictures. W. M. Morrison, Chicago, Ill.

Class A.—Gold medal, silver medal, bronze medal, and diploma. W. J. Root, Chicago; Pirie MacDonald, Albany; Huntington & Clark, Detroit; Arthur & Philbric, Detroit.

Class B.—Gold medal, Pirie MacDonald; silver medal, Huntington & Clark; bronze medal, Brigden & Geisler.

Class C.—W. J. Root, Chicago; Pirie MacDonald, Albany; Brigden & Geisler, Cleveland.

Class D.—Rating competition. Batcham, Norwalk, O.; Seavy, New Castle, Pa.; Siebolt, Flint, Mich.; Spellman, Springfield, O.; Sparks, Sioux City, Ia.; Carlo, Newport, Ky.

Class E.—Landscape photography. E. C. Berryman, A. Fanjoy.

Class F.—Landscape photography with figures. F. M. McCrary, Knoxville, Tenn.

Class G.—Interiors. Kimball, Seavy, G. H. Fowler.

Class H.—Marine views. A. Fanjoy, E. C. Berryman. Class I.—Combination pictures. Arthur & Philbric, E. Decker.

Class J.—Composition groups. Arthur & Phibric, McMichael, Van Loo & Frost, Mims.

Class K.—Commercial work. J. Betz, C. R. Baker, McCrary and Branson, J. B. Schriever.

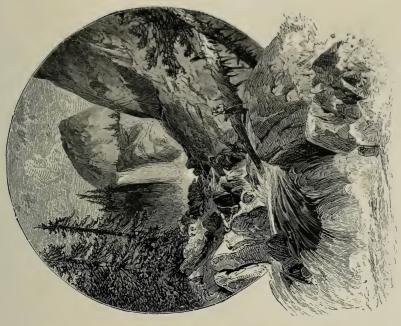
Class L.-Most tastefully arranged exhibit. Pirie MacDonald.

Foreign Exhibit.—Gabriel Lutzel, Munich; L. W. Kurtz, Wiesbaden.

#### OUR ILLUSTRATIONS.

MR. T. C. ROCHE contributes to the Bulletin one of its most interesting illustrations. The insert showing the Vernal Falls, Yosemite Valley, is printed from a wood-cut and a half-tone furnished by Mr. Roche. It is interesting to note that the original negative was made in 1871. Mr. Roche gives a very graphic description of the difficulties attending such work in those days. It should be remembered by our readers that a complete wet plate outfit had to be carried along, and, indeed, Mr. Roche tells us that he had to be his own guide, hotel man and photographer, and in those days to be one's own photographer meant considerably more than it does in these days of ready prepared plates, developers, and the like. Mr. Roche's idea in sending this block to us is conveyed in a short note from him, which reads as follows: "I send you a fine specimen of wood engraving, made from a photograph in 1872. The expense of cutting the block was \$50. I also send a half-tone made from the original negative within the last few days, and it may be interesting to your readers to compare the two modes of illustration." The half-tone block is a good one, and the resulting print differs very little from a silver print from the negative.

Another of our inserts is an excellent specimen of photo-engraving from Messrs. Zeese & Sons, of Dearborn street, Chicago. This concern is known the country over for its excellent work in half-tone, zinc etching and color work. Our other insert is of particular interest as showing what is being done in the way of half-tone work by our friends in Turkey. Mr. Vafiadis has been a correspondent of ours for some time, and we are very glad to be the first to present to Americans specimens of work from the far East.





HALF-TONE ENGRAVING, 1895.

PRESS OF A. H. KELLOGG, NEW YORK.

WOOD ENGRAVING, 1872.

VERNAL FALLS, YOSEMITE VALLEY. [ORIGINAL NEGATIVE BY T. C. ROCHE.] LIBRARY OF THE UNIVERSITY OF ILLINOIS



#### THE FUTURE OF THE THREE-COLOR PROCESS.

WE have proceeded sufficiently far with photochromy, or the production of prints in colors from printing surfaces secured by photographic means, to judge somewhat as to the future prospects of the process. Space here will not permit going into detail as to what has been accomplished or what particular difficulties are yet to be overcome. The present object is to consider in a general way the state of the process for the benefit of the many who are turning their attention that way, either as workmen or capitalists.

It is disagreeable to record that the outlook is not very promising. Indications that the process is not as yet commercially practicable are found in the fact that the great lithographic concerns, who could make most use of photochromy, have so little faith in it as to practically ignore it in their calculations for the future. It is true that they find half-tone photography a great aid in securing a "key plate," or "key stone," for color work, but the color plates or color stones are made from this key plate with an artist's help. It is also likely that photography will always be used hereafter in securing the "key plate" in place of the artist copying it from the design by hand, just as photography superseded the artist in getting designs on wood for the engraver.

It is also noticeable that France, the birthplace of photography, and always enthusiastic over any new discovery in the art, is slow to take advantage of this last development of Daguerre's invention. Frenchmen, too, lead the world in the appreciation of color effects, so that, unless there was some drawback to photochromy, it should meet with most favor in that country. We find that Germany and the United States show most confidence in the process by investing capital to experiment with it.

Here in New York, Mr. Kurtz and Mr. Bierstadt have produced most marvelous results through the three-color process, and their patient experiment in the matter is deserving of the highest pecuniary reward. Their success has been in reproducing still-life subjects, fruit, samples of rugs and color designs for labels, while the great mass of illustration, that for the periodicals, remains untouched by the process. And herein lies the chief drawback to the financial future of the process.

In brief, then, to lay aside the many mechanical obstacles in the way of the three-color process, there is this most serious one which has

not been considered before. The illustration of periodicals is the greatest field for the photochrome process. Unless it can enter that field, it cannot be made to pay. The periodicals demand pictures with action in them, of active life. The three-color process can only deal with still-life subjects, hence it is excluded from its most profitable field. If colored sketches or paintings must first be made of subjects portraying active life before they can be reproduced by this process, then a half-tone key plate from which an artist will make the color plates is at the present time the cheaper and most effectual method of procedure.

#### HOW BUSINESS APPEARS TO A BRITISH COUSIN.

Mr. H. Snowden Ward, of the *Process Photogram*, who has recently visited this country, says of the condition of trade in the United States: "In half-tone, things are 'bad, bad, very bad.' The firms seem to realize that some one has behaved somewhat foolishly, or, at any rate, hastily, in flooding a great amount of capital into the business, building large concerns, and then cutting prices below cost in the effort to keep the establishments running.

"Some of the large publishers (such as Houghton, Mifflin & Co., Boston, and Harpers and Appletons, of New York) tell us that they will pay 35 to 40 cents an inch for fine half-tone work; but for this price they do get really good work, much of it very carefully vignetted, and from this the prices for good plain work run down to 25 cents. Cutting houses, especially on contract work, go lower than this, but both block-makers and publishers seem to agree that 25 cents per square inch is about the regular minimum price in New York and Boston. In Chicago a great deal of work is done at appreciably lower figures."

#### TO A BEGINNER IN HALF-TONE WORK.

Mr. J. B. Erwin, of Zanesville, O., writes a long letter reciting his troubles with half-tone. As his "tale of woe" is but an echo of the chief difficulty all find some time with half-tones, he is replied to here.

Mr. Erwin places his screen  $\frac{1}{16}$  of an inch from sensitive plate, uses stop F/16. With an exposure of ten to fifteen minutes he finds, on intensifying a negative made under these conditions, he has dots almost filled up in the high lights. If he gives a shorter time he gets larger dots in the high lights and no detail in the shadows, etc. When he etches a print made from the first negative, the finest dots are eaten away before sufficient depth is obtained, and the darkest shadows are silhouettes in the plate made from the second negative.

He is in the same predicament every photo-engraver finds himself until he learns to use the second diaphragm. If Mr. Erwin will make two experimental exposures, he will understand the principle involved. First place the screen any distance he is accustomed to use it. Then, with an F/32 stop, make an exposure of thirty minutes; develop the negative and he will find detail in the deepest shadows, if the copy has

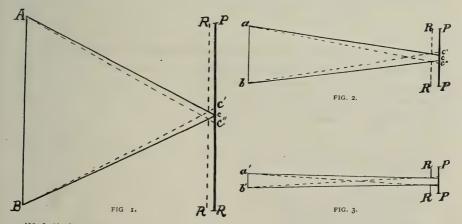
been sufficiently well lighted. There will be large opaque dots in the high lights, but not sufficiently wide to come together. Now make a second negative of the same copy, using stop F/8, and an exposure of eight minutes; this negative on development will give no dots at all in the deepest shadows, but with dots so large in the high lights that they can be closed together with sufficient development. Of course, the diaphragms and exposures given here are merely by way of illustration of the principle of managing your highest lights and deepest shadows. They will vary with the subject, light, lens, distance of screen from plate and sensitiveness of the chemicals used. But the small diaphragm, with plenty of exposure, will give detail in the shadows, while the larger diaphragm, with short exposure, will secure the closing up of the dots in the high lights to any degree necessary. It will be seen, then, that all that is necessary is to change the diaphragms during exposure, and you can obtain the desired effects in a single negative.

#### THE PRINCIPLE OF THE HALF-TONE DOT.

The laws that govern the action of light passing through the half-tone screen are thus shown in diagrams by Dr. Eder:

According to my views, the aperture of the diaphragm is formed on the plate by means of the series of pinhole cameras of the screen, as sketched in the diagram, Fig. 1.

In Fig. 1, let A B be the diameter of the diaphragm; P P, the sensitive plate; R R, the screen. A conical, bright bundle of rays, A B C,



will fall directly on the sensitive plate with correspondingly large diaphragm aperture through the screen, which is at a very small distance close to the sensitive plate.

"On the other hand, the penumbral cone Ac' Bc', which crosses in front of the lineature hole, gradually becoming weaker toward the edges, broadens the dot. These penumbral rays will spread out on the negative image, the brighter the light or the longer the exposure, and diffraction phenomena only play a secondary rôle. If the diaphragm aperture is reduced (see Fig. 2) there is also formed with the diaphragm ab a penumbral cone with crossed marginal rays, but the crossing point is advanced further toward the diaphragm opening; consequently, the

diameter of the image dot cannot alter proportionately to the diameter of the diaphragm, as is immediately seen from the geometrical construction. The penumbral cones with further decrease of the diaphragm is so reduced, as shown in Fig. 3, and, in the latter case, it is immediately obvious why the dots alter very little in the lights and shadows, and cannot satisfy the fundamental requirements of a good half-tone negative—which the above proves."

#### CHRYSOIDINE DYE FOR DARKROOM WINDOWS.

Henry Calmels recommends chrysoidine as a stain for darkroom windows.

"Chrysoidine dye is a most non-actinic color, and, therefore, a faint tint is quite sufficient for the wet process. The operator can dye the glass himself, as follows:

The glasses, taken out of the window, are cleaned and well dried, and then coated with a solution of india-rubber as sold in the trade—poured on the glass as collodion would be. Let it dry (that will take about ten minutes), then give a second coating with tinted collodion prepared as follows:

Methylated spirit	20 ounces.
Gun cotton	4 drams
Methylated ether	20 ounces.

Shake the bottle, and when the cotton is dissolved add some chrysoidine until you get an orange color. The chrysoidine collodion can be tried on a piece of glass to judge the intensity before coating the darkroom window.

Having the right color, the collodion is poured over the india-rubber and allowed to dry, and then the glass can be replaced. The coating can be protected by covering it with a second glass. The film being between the two glasses, the window can then be cleaned without fear of removing the color."

THE newest formula for enamel solution, published in Germany, is as follows:

--0;<del>0</del>;0--

Le Page's glue	060 t	arts
water	060	"
Bichromate of ammonia	T20	
Water	060	4.4
Dry egg albumen,	T20	6.6
water	T 020	6.6
Chromic acid	10	6.6

#### AN APPLICATION OF COLLOTYPE.

In collotype E. Bierstadt's work is extremely interesting. Quite a specialty for some years has been the production of "family" books, a profitable phase of personal vanity not much known in England, but very firmly rooted in the States among the growing aristocracy. A family book consists of a history of the family, with the fac-similes of old deeds, documents and pedigrees, and reproductions of any old relics,

portraits of ancestors, etc. Such a book is a monument to the family, and many of the old Americans have spent great sums in this way. As Mr. Bierstadt is an enthusiast in matters dealing with antiques, and is especially a lover of old books, he has a business probably unique, in supplying fac-similes of old books and title-pages, and especially in replacing lost leaves of old and valuable works. When such commissions come it is necessary to obtain access to some perfect copy of the book, with permission to photograph the leaf that is needed. It is also necessary to have on hand a collection of old papers, and Mr. Bierstadt is an extensive buyer of blank leaves from old books of little value, and other small lots of miscellaneous old paper. Sometimes, even with this stock, it is necessary to fabricate a paper, and often the harmless necessary coffee gives the tone of antiquity.—*Process Photogram*.

It is curious to notice the manner in which an invention will influence the whole field of subsidiary production. Thus, when the half-tone illustration became an entity, the various departments of production auxiliary to half-tone printing suffered a change. Paper has remarkably adapted itself to the needs of the printer of these shallow surfaces, and our periodicals reflect constantly the success or failure of the manufacturers of paper upon whose product they may have been executed.—Paper and Press.

#### HALF-TONE SCREEN VALUES.

To the Editor Anthony's Photographic Bulletin:

Sir,—Answering the communication from Mr. W. K. Burton in your July issue, allow me to make the following statements in answer to that gentleman's questions.

In his paper, read before the London and Provincial Association, Mr. Burton states: "Were this the whole action, the negative would consist of squares of all the same size, but varying densities." It will probably astonish this gentleman to learn that the transparent squares of a rectangular grating have nothing whatever to do with the formation of the dot in a half-tone engraving; that is, in a direct manner.

The existence of the dot in every instance depends wholly and entirely upon the intersection of the lines of the grating, the corners of each right angle being the last to lose their identity caused by the lateral spread of light. The half-tone gradations are represented by a more or less exact copy of the line screen, an open space—or white dot—occupying the center of each individual square.

This space is larger or smaller as it approaches the high lights in the one instance, and the solid shadows in the other.

This formation, as every intelligent engraver is aware, is the result of the same action, "refraction"—dioptric formation—observed in the formation of the dot, only in a lesser degree.

The dots of an engraving are in every instance the right angle corners of each individual square in the grating.

"Will Mr. Anderson explain by lateral chemical action the fact that many of the dots are smaller than the openings in the screen

through which the light to form them passes?"

The foregoing explanation answers this, seeing that the dots are not formed opposite the openings of the screen through which the light passes, but, as previously stated, are the right angles of each square.

My article in the April Bulletin plainly stated: Four factors determine the structural nature of the half-tone negative—exposure, size and shape of diaphragm, distance of screen from plate, make of lens used.

The explanations and facts given above have to do with the third factor alone, viz., distance of screen from plate. The statement being to the effect that the dots are not dioptrically formed, I have given the above facts to prove that the deductions in this matter are erroneous.

In this quest of truth and knowledge do not my investigations, covering a period of ten years, give me the privilege of a hearing? Are the facts evolved in the pursuits of learning unworthy of examination? Should facts, the only true foundation of any science, be ruthlessly trampled under foot so that one particular individual may rest undisturbed in the enjoyment of a flimsy theoretical hypothesis?

When truth is proved by demonstration, it exists as a fact, not as a

theoretical assumption based on anticipation.

If my critic has, by his labors and investigations in this direction, obtained definite results from which he can speak authoritatively, then may I ask him, in the interests of science, to bring forward such facts as evidence, thereby materially helping in establishing his position?

His assertions in this matter assuredly overreach his evidence. To the charge of ignorance I plead guilty, but its connection with the question at issue must be determined by others. I am not in the habit of taking a superficial observation through my mental quadrant, then hastening to a scientific log-book to record it as an established fact.

MACFARLANE ANDERSON.

Writing on Trimming and Mounting Photographs in the British Journal of Photography, Edward Dunmore remarks: "I am not partial to dome-shaped pictures; they seem to suggest some part hidden that might better be displayed, or that some defect has been At any rate, a subject that would look well dome-shaped would look better squared up; eccentric shapes, except for special purposes, are better avoided. \* \* \* An excess of plain uninteresting foreground is a common error, and scores of photographs are completely spoiled from lack of courage to use the knife freely. Ovals do not afford us much choice in form; they may be narrow or wide, verging on the circular, the former suggesting the panoramic form when used horizontally. However, some subjects look well in suitable ovals, and it affords an opportunity for cutting off a portion of an uninteresting foreground without diminishing its depth, when it is necessary to the general effect of the subject. \* \* \* The less ornamental a mount is, the better for the picture. A simple line or its equivalent in suitable pale tints is all that is required in the way of decoration. The mount being in only one tint, a line of light color a short distance from the subject will have a good effect. Some prefer the mount severely plain, but the general opinion is that a line is an advantage, and gives an impression of completeness, especially in subjects where a space in the center of the upper portion of the subject is unfilled. Dark margins or of pronounced color are seldom, if ever, suitable for prints of any description. One rule will, I think, apply to mounts of all kinds, and that is, they should never be of such a character as to challenge attention before the pictures they support, but merely by their tint or form add to the value of the photographs on them."



Photographers' Association of Ohio.—The Convention was called to order by A. L. Bowersox. After the address of the President and the reading of communications, the following gentlemen were appointed on nominations: Messrs. Bellsmith, Hollinger and Lewis.

The following gentlemen were appointed as judges: Mr. Overpeck, Mr. Bellsmith, Mr. Lewis, Mr. Hume, Mr. Triplet.

The names of the judges were placed in a hat and the first three drawn were to constitute the three judges, Hume, Triplett and Lewis being the ones selected by lot. Ex-President Mr. Bellsmith then addressed the Convention upon "The

JULY 24-II A. M.-After reading of the communications the President called for the report of the Nominating Committee. The Committee placed the following

President, L. C. Overpeck; First Vice-President, Brigden; Second Vice-President, Mulligan; Secretary, Geo. B. Sperry; Treasurer, J. C. Harring.

The election of officers resulted as follows: President, L. C. Overpeck; First Vice-President, Brigden; Second Vice-President, Mulligan; Secretary, Geo. B. Sperry; Treasurer, Hollinger.

Columbus was chosen for the next place of meeting in 1896.

Mr. Appleton read a report of the Salon Committee. It was moved and seconded that we receive this report and continue the Committee for another year. Mr. Sperry declined serving, and Mr. Harring accepted Mr. Sperry's place.

Upon motion it was decided to send all pictures accepted in the Salon to the

National Convention P. A. of A. at Detroit, Michigan, 1895.

Mr. Appleton made a few remarks regarding the Salon, speaking of the educational feature. A vote of thanks was extended to the Salon Committee for their excellent work. Mr. Appleton urged that all photographs should be sent in plenty of time to properly examine them. Mr. A. G. Bigelow made a few remarks regarding flashlight photography.

Wednesday-3 P. M.-After reading a communication from Secretary Hayes, of the P. A. of A. Convention, it was again decided to hold the next convention at Columbus, O. Mr. Appleton addressed the Convention on "The One Thing," which was highly appreciated. Mr. Sperry followed with a few remarks which were practical and enjoyed by all.

Mr. Hollinger spoke of the great benefit he had received from the Convention, and impressed upon our mind that every face had some beauty in it.

THURSDAY—II A. M.—The report of the Judges in awarding prizes was as follows:

Class A-1st, Baker's Art Gallery.

2d, Hollinger.

3d, Brigden & Giesler.

Class B-1st, Hollinger.

2d, Brigden & Giesler,

3d, G. B. Sperry. Class C-1st, Hollinger.

2d, Brigden & Giesler.

3d, L. D. Spellman.

Class D—1st, Wickersham.

2d, Batham.

3d, R. D. Beem.

Class E—1st, J. D. McLean.

2d, Morvery.

Class G—1st, Brigden & Geisler.

2d, Mims.

3d, Wickersham.

Rating—1st, Brigden & Geisler.

2d, E. Decker.

3d, Mims.

Mr. Miller made a few remarks on "Method in Photography." A vote of thanks was extended to the City Council for the use of Hall and Council Chamber. A vote of thanks was also extended to the city papers and photo journals. A vote of thanks was extended to the judges awarding prizes in using so excellent judgment. The President then made a few remarks on the great improvement in our work during the past few years, and speaking in the highest praise of the State and National Convention.

The banquet on Wednesday evening was a most enjoyable occasion; in fact, it was voted by all that the entire Convention, both socially and artistically, was the best in the history of the Association.

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Photographers' Association of Kansas.—The first annual convention of the Photographers' Association of Kansas will be held in Garfield Hall, Wichita, on October 1st and 2d. Officers: President, P. A. Miller; First Vice-President, A. McInturff; Second Vice-President, H. S. Stevenson; Treasurer, C. Sawyer; Secretary, G. M. Sandifer, El Dorado, Kan.

THE BRIDGEPORT LIBRARY EXHIBITION.—Our readers who intend to be represented at the Bridgeport Public Library Exhibition should ship their prints to Mr. W. J. Hills at once. The exhibition opens on September 21st and closes on October 31st. Last year's exhibition brought 20,000 people during its run of seven weeks,



A New Book.—"Platinotype, Its Preparation and Manipulation," by Capt. W. de W. Abney and Lyonel Clark, is a book that will be read with great interest by all interested in matt-surface printing, and to say this is to include every progressive photographer. The historical part of the book is simply invaluable.

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REPRODUCED FROM WATER-COLOR PAINTING  $$_{\mbox{\scriptsize BY THE}}$$  NEW THREE-COLOR METHOD

SUPPLEMENT TO ANTHONY'S PHOTOGRAPHIC BULLETIN

PLATES ENGRAVED BY
PHOTO-CHROMOTYPE ENGRAVING CO.
HALF-TONE ENGRAVERS AND ZINC ETCHERS
PHILADELPHIA

# ANTHONY'S

# Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

VOL. XXVI.

OCTOBER, 1895.

No. 10.

#### CARBON PRINTING.

DURING the last twelve months the professional photographers of this country have been giving no little attention to the carbon process, and the excellent exhibits made recently at the photographic conventions by such prominent photographers as Davis & Sanford, Pirie MacDonald and the Baker Art Gallery have created such a demand for the tissue and for instructions on the working of the process, that we feel that a general outline of the necessary manipulations will be welcome to all our readers, both professional and amateur. We would again note that, whereas it has usually been necessary to purchase the tissue here in rolls  $2\frac{1}{2} \times 12$  feet, it can now be bought in cut sizes in packages of one dozen sheets. It is therefore within the reach of every photographer, and we feel that, if ordinary care is taken in the working of the process, the results will be of such a quality as to induce the experimenter to become a permanent user of carbon tissue.

### ADVANTAGES OF THE CARBON PROCESS.

Most photographers have a dim idea of the process, and have also heard it associated with the word permanency. It is claimed, and with, we believe, truth, that the carbon process yields prints absolutely permanent. Other processes will, if properly carried out, give results that may be classed as permanent, but there are so many pitfalls in these latter processes, that oftentimes, though apparently every precaution has been taken, fading, in one form or another, appears after a few years. The carbon process, however, is not open to any such errors in judgment. A print once made is certainly permanent. It should be remembered that the image is formed of a permanent pigment, held in gelatine which has been hardened by alum. It must therefore be as permanent as the support on which it is held, unless the pigment chosen is a fugitive one. When mounted on glass it may truly be said that the life of the picture is only limited by the fragility of the support.

Again, as the picture consists of a pigment mixed with gelatine, practically any color may be used, care being taken, of course, to employ only pigments regarding the permanency of which there is no doubt. The Autotype Company, of London, who are practically the only makers of carbon tissue, supply this tissue in many colors, among which are standard brown, warm black, engraving black, special transparency, sepia, red chalk, Lambertype purple and sea green. Any of these colors may be used for experimenting, though the purple, standard brown, engraving black and sepia will probably find greatest applicacation among photographers.

Another point of no little importance. The surface of the print is entirely under control, depending on the surface of the support on which the print is developed. If matt-surface prints are desired, the tissue is developed on a matt surface; if a glossy surface, it is developed on a sheet of glass coated with collodion, and transferred. With regard to the quality of negative necessary, it may be stated that good prints may be obtained from any negative, though, of course, the best results are given by negatives that we are accustomed to call perfect, negatives of good density with ample detail.

It has often been stated by those having no knowledge whatever of the process that carbon printing is dirty work, and so difficult that only a few, with ample experience, can hope to succeed with it. This is an incorrect statement. The carbon process is one of the simplest of processes, always yielding good results if properly worked, and being entirely free from all such troublesome processes as toning with gold, fixing in hypo and prolonged washing. It is stated by some that success with the carbon process is largely a matter of chance; that, as it is not a printing-out paper, there is no certainty of the correctness of exposure. These objections are raised only by those who have never worked the process, for, by means of the actinometer, exposures can be accurately made; indeed, much more accurately than with the various silver processes, where bleaching always occurs, either in the toning or in the fixing bath. Finally, there is no great outlay necessary for the working of the process. In addition to the ordinary darkroom accessories, an actinometer, squeegeeing board and a squeegee are all that is necessary.

THE TISSUE.

We do not advise our readers to prepare the tissue. It is not an easy thing to do, and it is almost impossible without proper machinery to obtain the necessary even coating. The tissue, as sold, is practically perfect, and its price, \$2.75 for a band  $2\frac{1}{2} \times 12$  feet, is low. As before stated, carbon tissue is paper having on its surface a film of gelatine fully impregnated with a permanent pigment. Tissue must be kept free from dampness and is best preserved in tin tubes. When unrolling a band, care must be taken to prevent cracking and the gelatine side should not be handled with damp fingers. A pair of cotton gloves will save much trouble. In the summer the tissue may be found to be very brittle, and before cutting it should be hung for an hour or two in a slightly damp place, such as a cellar.

#### SENSITIZING THE TISSUE.

As purchased, the tissue is not sensitive. The principle of the carbon process may be briefly stated as follows: Gelatine which contains bichromate of potash or ammonium becomes insoluble on exposure to light. The tissue, having been cut to the desired size, is immersed for three minutes in a bath of—

Potassium bichromate	
Ammonium carbonate	3 ounces.
Water	70 grains.
Water	100 ounces.
a solution of	

#### or in a solution of

Potassium bichromate	To crnoin.
Ammonium bichromate	io grains.
Water	5
	I ounce.

It is well to dust off the carbon tissue before immersing it, and also to filter the sensitizing solution. Air bells that form on either back or front of the paper must be removed by touching with the finger or a duster. The proper moment for withdrawing the paper from the sensitizing solution is when it no longer curls. After sensitizing, the paper is hung up to dry in a cool dark room. The time of drying is somewhat important and should be from six to ten hours. Paper sensitized over night should be ready for use in the morning. When ten or twelve sheets have been sensitized, a new bath should be made up. With the new "daylight tissue," all the operations may be conducted in daylight. This daylight tissue was invented last year by Walter White, the principle being the use of opaque or non-actinic paper as a support for the pigmented gelatine. This tissue, after being sensitized, is squeegeed into contact with an opaque support, and may be dried in the open air in daylight.

#### THE SAFE EDGE.

Negatives from which carbon prints are to be made should be provided with what is technically known as a "safe edge." This is made by pasting round the edges of the negative a strip of opaque paper about one-fourth of an inch wide. Such a safe edge, while not absolutely necessary, will be of great service when developing, preventing the picture from washing up at the edges. It is, of course, not necessary when vignetting.

#### PRINTING.

The sensitized carbon tissue is placed in position in the printing frame and exposed in the ordinary way. As this is not a printing-out process, and as, therefore, there is no visible change in the tissue during the exposure to light, it is necessary to use an actinometer or photometer which will serve as an indicator. Indeed, it is possible with such an instrument to attach to each negative a number which will at all times and under all conditions serve as a guide to exposure. One of the simplest forms of actinometer is made as follows. A 4 x 5 positive

is made from a series of printed numbers running from one to twelve or more. Upon this are laid sheets of tissue paper, there being, say, one piece over the one, two sheets over the two, and so on. Over all is laid a piece of clear glass, and the two pieces of glass are firmly bound together with Sheplie gum paper. The negative from which the carbon print is to be made is compared with this actinometer and the number of the section most nearly corresponding to it in density is noted. The actinometer is then placed in a printing frame and a piece of sensitized silver paper is placed behind it. The actinometer is now exposed to light along with the negative, behind which is the carbon tissue. When the silver paper behind the noted section of the actinometer is of the proper tint, the carbon tissue is developed. If the exposure is found to be correct, that particular negative is marked with the number noted, and thus a means of exactly duplicating the exposure is at hand. Such an actinometer is sold for \$1. Another form of actinometer is that known as Johnson's actinometer. A small metal box contains a roll of sensitive paper. The top of the box is hinged and carries a yellowish piece of glass, on which is painted a standard tint, leaving a central clear piece of glass under which the sensitive paper is moved. The instrument being exposed alongside the carbon tissue, the paper is allowed to darken until it is of the same color as the standard tint, when one tint is recorded, and the paper pulled on for another one. In this way negatives may be marked as requiring two, three or more tints, and the correct exposure, once ascertained, can be duplicated at any time. I. Burton's actinometer consists of a strip of glass bearing six small negatives, representing six different densities. The negative to be printed from is compared with these six standard negatives and that one selected which is most like it in density. Exposure is made in the usual way, and when the actinometer negative yields on the sensitized silver paper a properly exposed print, the carbon tissue under the negative will be properly exposed. The first form of actinometer described —the scale photometer—will probably best answer all requirements.

In printing, all the precautions usual with silver paper must be observed. The tissue, negative, and printing frame should be dusted, and a dry felt pad should be used between the tissue and the back of the printing frame. The frame being put out in the light, the actinometer is watched, and when the proper tint is reached, the tissue is properly exposed. Of course one actinometer will answer for any number of negatives, all corresponding to certain numbers being turned over as those numbers are reached on the actinometer.

#### DEVELOPMENT—SINGLE TRANSFER.

It must here be pointed out that in the carbon print, the underside of the pigmented gelatine film is developed. The reason for this is perhaps obvious, for as that part of the gelatine nearest the support has perhaps not been affected at all by light, it is soluble in water and the whole picture would float off, or, under any circumstances, a picture devoid of half-tones would be obtained. To get at this under surface, in order to develop the print, it is necessary to transfer the whole gela-

tine film from its old, to a new support. If desired, this may be made also the final support, and in this case, as only one transfer has been made, the process is called the "single transfer process." A special paper, known as single transfer paper, is sold, and this is simply paper covered on one side with gelatine, made insoluble by means of chrome alum.

The exposed tissue is placed in a tray of cold water, and a piece of transfer paper placed in the tray beneath it. After both papers have become limp they are lifted from the water, laid on a smooth board or a piece of glass, covered with a piece of rubber cloth and squeegeed into close contact. After being left under a slight pressure for from ten to fifteen minutes, the two are immersed in a tray containing lukewarm water, say about 105 degrees Fahr. In a short time a slight pressure on one corner will force out a little of the colored gelatine, and then the paper back of the carbon tissue may be pulled off with one even pull, the gelatine film being left on the single transfer paper. On rocking the tray, the unexposed pigmented gelatine will wash off, leaving the image on the transfer paper. The development need not be done in the darkroom, for when the tissue is wet it is not sensitive to light. By varying the temperature, any incorrectness in exposure may be partially overcome. If the tissue is under-exposed, cooler water should be used; if over-exposed, hotter water should be applied and the print rocked considerably. When development is completed, the print is rinsed in cold water and placed for about ten minutes in an alum bath, made by dissolving 4 ounces of powdered alum in 100 ounces of water. After washing well in water, the print may be hung up to dry. The mounting is done as usual, care being taken that the paste does not touch the picture. The print may be covered with a piece of paper and well rubbed down.

Carbon opals, transparencies and lantern slides are made in exactly the same manner, well-cleaned opal or plain glass being used instead of the single transfer paper. For lantern slides, special transparency tissue is used. The exposed paper is laid on the well-cleaned glass, squeegeed into contact and left under pressure for a few minutes. After development, the plate is rinsed, treated with alum, dried and mounted as usual.

#### Double Transfer Process.

It will be seen that the prints made by the single transfer process will be laterally reversed, this being so because the prints are developed from the back. This can, of course, be obviated by using reversed negatives or by printing from thin films, in which latter case the back of the film is placed in contact with the tissue. When a reversed negative cannot be used, and when it is a matter of importance that the picture should be right and not laterally reversed, a second transfer must be made by the so-called double transfer process. This has been looked upon as a difficult matter, and yet with care it can be safely and easily done. The carbon tissue is first developed on a waxed support, and then transferred to its final support. A sheet of the temporary support sold for this purpose, and which is a paper prepared with an aqueous

solution of shellac, is prepared by coating it with waxing solution made by dissolving the waxing compound (also sold for this purpose) in turpentine. This paper must then be rubbed over with a brush, finishing up with a soft rag. The exposed tissue is now developed upon this paper in exactly the same way as described for the single transfer process. The waxed paper support has now upon it a reversed picture. It is allowed to dry, and then placed into water along with a piece of paper known as final support, being squeegeed into contact with this, and then laid aside to dry. When perfectly dry, the temporary support may be stripped off and used again.

Carbon prints may be burnished with an ordinary burnisher, but care must be taken that they are thoroughly dry before passing them

through the rollers.



M. CH. FREMONT has devised an ingenious method of illuminating opaque objects for the microscope, this method being particularly useful when high powers are employed. A concave mirror is fixed inside the body of the microscope and reflects the bundle of rays of light received through an aperture in the side, and rendered parallel by an interposed prism, through the object glass, on to the object under examination. A hole is bored through both mirror and prism in the track of the rays passing from the objective.

E. Burinsky deciphers faint and faded writing on old documents by making several film negatives from the copy, superposing these, and thus obtaining sufficient density to make the characters readable.

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Mr. West, of West & Son, the famous yacht photographers of Southsea, England, called on us the other day. He had been photographing the cup races, and could not sufficiently express his surprise at the enormous interest taken in the events. He thought that such a demonstration on the other side would be an occasion for the use of a few war ships. We must agree with him that some action is really necessary to prevent the interference with the yachts by excursion steamers.

In the British Journal of Photography J. Pike describes an adaptation for film printing frames that may be found useful. The ordinary

printing frame is fitted with a new back divided into three pieces, which are hinged together. A piece of thick cloth is glued upon this back, and, when dry, is cut at the bend. On the frame is put a third spring.

And now the *Photographic News* calls "The International Annual" "Anthony's Photographic Annual." Please quote us correctly.

In our report of the prize winners at the Detroit Convention we inadvertently omitted part of the Class C list. The full list is as follows: W. J. Root, Chicago, first; Pirie MacDonald, Albany, second; medals to Brigden & Geisler, Cleveland; E. Decker, Cleveland; Knaffl Brothers, Knoxville, Tenn.; and diplomas to F. M. Somers, Memphis, Tenn., and Van Loo & Trost, Toledo, O. Messrs. Knaffl Brothers are the only southern photographers who received a medal in portrait photography, though many creditable prints were sent.

The half-tone reproduction, "Give the Workingman a Chance," which appeared in our August issue, was made from a photograph by Moore & Chard, of Lancaster, O., who send us also an excellent study of a head.

Chapman Jones says: "It is as wrong to attempt to make a portrait of an individual with anybody else's spectacles on, or mere empty frames, as it would be to photograph a man in another's coat or hat, to suit the photographer's convenience. This difficulty of spectacles is an imaginary one, and exists to only a very small extent. They are often characteristic of the individual, and the photographer is never justified in removing or changing them, merely to suit himself."

"Suppose we wish to take an instantaneous photograph of a very rapidly moving object, we know that we must drive our shutter at a very high speed to obtain the minimum of movement. In the print we look for—what? Personally, I look for detail in the shadows; and the plate which will give me the most printable detail in the shadows is to me the most valuable, and the one I should call the most rapid, irrespective of its number by any special system of its speed measurement. Some one else may look to some other point as indicative of rapidity, but from questions put to many workers of all classes, I think that the plate which will give the most detail—printable detail—in the shadows is considered the quickest."—E. J. Wall.

"The great use of exhibitions is to educate the undiscerning public to some perception of the æsthetic element present in high-class photography, to open the eyes of the blind to the charm of artistic impression accomplished without sacrifice of veracity."—W. S. BIRD.

The Chicago Photo Stock Company, of 38 East Randolph street, Chicago, will shortly issue a photographic periodical, to be known as *The Indicator*.

Writing on platinotype printing, Valentine Blanchard remarks: "As the platinum paper is so much more sensitive than ordinary silver paper, the rough and ready method of examination in the open air is scarcely available; it is better, therefore, to turn down all the frames of even a small batch while the examination of No. 1 is being made. As the impression is very faint, more judgment is needed to determine when the negative is fully printed; be deliberate, therefore, in arriving at a conclusion, and look well at the more delicate parts of the negative."

"The amateur must not forget that the action of light once set up is continued in the dark, and that this applies equally to platinum as well as to carbon. If he has any doubt of this, let him print until the shadows are well out, but the half-tones wanting, and then put away the frame, with the paper still in contact with the negative, in a dark



Cloud Study by A. J. Henry.

place for half a day. When he removes the print from the frame, he will probably find that all the details are fully out, and that there is quite a strong image. On immersion in the developing solution, particularly if this is of normal strength, the print will rapidly develop into a muddy over-printed one."

"Ir platinum paper be kept for some time flat and under pressure, but without any further precaution against damp, there is a loss of brilliancy in the print, and the tone is not nearly so cold. This fact can be turned to account in printing hard negatives. It must not be forgotten, however, that the paper cannot be kept in a very damp place without serious deterioration. It is most important to remember that the platinum is very much on the surface of the paper, and, therefore,



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take care not to drag the prints over each other during washing operations. Many prints are spoiled by inattention or want of knowledge in this matter."

H. P. Robinson writes: "The man who never reads a photographic paper may think himself very wise; but he certainly misses that which ought to add joy to his life, and, perhaps, a little knowledge."

Answering a correspondent of The English Mechanic, Mr. W. I. Chadwick writes: "You can draw or sketch a diagram on a plate coated with black varnish which will show white lines on a black ground. Use a sharp steel point for sketching or drawing; but, of course, this wont do if you want to trace a diagram from a book. The best of all methods is to get a box of photographic lantern plates, open these in daylight, and immerse in an ordinary fixing solution (hypo I to water 4). This will remove all the silver, and after washing the plates they are as clear as clear glass, with a fine even surface of gelatine on one side when dry; they can be sketched upon with an ordinary pen, or a drawing pen may be used. India ink, crimson lake, or prussian blue may be used, and the drawing or diagram is now on a white ground. If it must be on a black ground, then expose a lantern plate in contact and develop it as for a lantern slide. We have then white lines on dark ground. Strips of thin colored gelatine may be fixed over certain lines to give colors to certain lines-for instance, 'center lines,' etc." ----o;@;o---

Professor D. L. Elmendorf has returned from a trip through Southern Italy, and has brought with him ninety-six dozen exposed plates. This represents considerable work, especially when we remember the care given to each exposure by Mr. Elmendorf. Southern Italy, he says, is a perfect paradise for photographers. The tele-photo lens, we understand, did yeoman service.

In the English Mechanic for September 6th is given a description of a primary electric battery which may bring about a revolution in lantern and electric-light illumination. Dr. Hugo Schroeder, whose connection with optical work is well known to our readers, is the inventor of the cell we allude to. S. R. Bottone, in the publication above alluded to, says: "Although the dynamo is far and away the cheapest source of current electricity when this is required continuously, yet there are many occasions in which a dynamo is not convenient and actually more expensive than a battery. I need only mention lectures, bazaars, private entertainments, magic-lantern exhibitions, etc., to call to mind instances where the prime cost of a dynamo and engine would render their employment prohibitive." Details of the construction of the cell are given, and we understand that with such a compact and portable battery it is possible to perform any work taking from 20 to 30 volts, with a current of from 20 to 30 ampères, for about an hour and a half with one charge. The day seems to be drawing nigh when overhead trolley wires will be a thing of the past, and when the individual will inexpensively and easily produce electricity for home consumption.

#### PHOTOGRAPHY WITH A PURPOSE.

THE average amateur photographer seldom has any definite plan in his work, and should he obtain photographs of real merit, it is as often the result of accidental circumstances as of arduous painstaking effort. In a paper read before the Leeds Camera Club, Mr. S. Margerison comes to the point, and his paper will, we think, be read with profit:

"If our aim be to produce artistic pictures in distinction to photographs for purposes of scientific record, we must study the laws which govern composition and the picturesque treatment of light and shade. What is true is not necessarily beautiful, and if we are aiming at producing a record of the beautiful we must be content to watch and wait for it, and to be ready at the opportune moment to seize and work it out to the very best advantage. I do not see any reason whatever for refusing the aid of any means of aiding the processes of pure photography by external means, provided they do not detract from the harmony of the picture. Our object is to produce a picture which will please or instruct, and not to show off our skill in manipulation. With regard to prohibiting retouching, combination printing, or other such means at an exhibition, I cannot help thinking that such prohibitions have been the means of preventing the improvement of many a faulty photograph, which a very slight alteration would have made a work of art. Turner did not hesitate to transport a church into a picture, or to alter the contour of a hill if it were an improvement or added to its artistic truth, and I consider that a photographer who is aiming at making a picture has an equal right, if he knows how to do it properly. to substitute an appropriate figure or bramble-bush for an obtrusive. ugly or paltry eyesore in his work. Of course, if he can get his effect by other and simpler means, such as changing the point of view, choosing a time or date when the lighting is such as to obliterate the offending blot in his composition, it is better to do so; but this is not always possible. We have all experienced the advantage of care in this direction. What a difference the moving of our camera a few feet-sometimes even a few inches-will make; and a quarter of an hour or more spent in choosing the point of view will amply repay us. A view-finder judiciously used will save us the trouble of repeatedly moving the camera and viewing the scene upside down. Again, as to light and shade, what a difference there is in the breadth of effect in photographs of the same scene taken at different hours of the day, and still more so at different seasons of the year! What a difference, to take an extreme instance, there is between a photograph taken with a large stop and a front light in the evening of a day when the snow has fallen thickly, and the same scene taken in brilliant midday summer sun, picking out every blade of grass and every daisy petal, the detail increased by using a small stop.

"By continual study of one class of subject, an operator will gain a habit of seeing and knowing quickly what lighting and position will best suit the subject. If a man makes a specialty of river scenery, he will gradually learn how to best interpret the ripples and reflections, the transparencies and the shadows. If the taking of mountain scenery be the special work, he will spend hours in choosing the point of view and the foreground which best shows the majesty, contour, and grandeur of the hills. He will watch for cloud effects, and will humor his developer to bring out all that he knows is on his plate.

"The photographer of animals will study them at every opportunity, whether he has his camera with him or not. He will carefully note in his mind their characteristic attitudes and their bearing to each other; will learn how to get on good terms with them, by studying their life and habits, and humoring them accordingly. What a lot of photographs we see which contain animals, and how few there are (and these the work of a few men) in which the animals seem to be in a natural position, and are at the same time disposed in anything like artistic arrangement. There is a wide field for the photographic artist who takes up animal studies.

"What opportunities there are for one to take up the study of woodland scenery. Years of practice would only show how much there is still to learn in the treatment of trees, ferns and flowers. A great power has been placed in the hands of the photographer of foliage by the introduction of isochromatic plates and films; backing of plates will save halation. Woodcraft has always been a favorite subject with artists, but not much has yet been done by photographers in illustrating it.

"What a vast opportunity there is for the dweller by the sea! Wave studies, cloud studies, shipping, fisher folk, in infinite variety. The seeing eye can find pictures almost anywhere, both ashore and afloat. And a lifetime would be all too short for a worker to render a tithe of them.

"Even those who are obliged to spend their time in a large town can find innumerable subjects of artistic value. The chief requisite is the faculty of seeing a picture when it is present. We must train ourselves to know a good arrangement when we see it, and it is surprising what opportunities we shall find. A crossing sweeper, a blind beggar, a batch of quarreling street arabs, an old book shop, groups of buildings. Scores of things are about us every day, capable of being made into pictures, could we but see them in their right aspect. Nowhere is the truth that 'we see what we look for' more apparent.

"The town has a different aspect to every class of visitors. To the merchant it is the home of commerce, to the fashionable lady the abode of fashion, to the artist the picture galleries are important, to the student the libraries. The dweller in the country looks here for his shop supplies, the philanthropist sees greater opportunities for helping his kind. And so the picture-maker, if he makes a special study of town life, will find abundant material to work upon. Of course, it will be almost necessary to make the hand-camera the chief part of one's tools here, and it will be necessary to study, with the care of a poacher, every method of bagging game without observation. Once the subject sees us, away will go his natural expression, and the result will be a

failure. The look of suspicion we see on the faces of many of the subjects of hand-camera pictures is most painful, and no effort must be spared to avoid it.

"If the photographer's lot is cast in the country, there are innumerable branches of artistic work open to the photographer. A series of farm scenes for all seasons of the year would, carried out in a painstaking and thorough manner, be sufficient occupation for the leisure time of years, and would always be looked upon with pleasure. Country working costumes have still, occasionally, the elements of the

picturesque in them, and so no opportunity should be lost of securing them.

"Besides farming there are numbers of other country occupations well worthy of being studied photographically from the artist's standpoint, and they would be also useful as records for the future.

"Whatever be a man's surroundings he is sure to have some opportunities, probably denied to others of the same tastes, for acquiring a stock of pictures which will have some value, and if he will make some branch of artistic work his specialty, and work at it with an eye and an understanding trained to see and grasp to work out all the possibilities lying therein, he will produce something



CLIMAX PLATE.

Child Study by Hemperley.

by which he will be remembered, and which will give pleasure to others.

"What I desire to insist on is this, that one who wishes to produce a picture must know what he wants, must be aiming at something definite and worthy, and must know it when he sees it, and have the promptitude to fix it at its best. By having a special purpose before him he is better able to do this than he would be if only wandering about in a promiscuous sort of way with a couple of dozen films in his changing-box, which he feels bound to expose before he goes home at night, on something or other.

"A plan which has sometimes been found effective and useful is to choose some poem, and entering thoroughly into the spirit of it, looking up and photographing scenes illustrative of its sentiment. It may be months sometimes before a scene suitable to illustrate some passage is found, but I can conceive few pleasures more keen in the way of holiday hobbies than such a purpose, and when completed it is one which will appeal to most people's sympathies.

"Breadth of effect, harmony of lines and good grouping are conditions of subjects which every artist-photographer must pay some attention to, and the study of Mr. H. P. Robinson's works will be an easy help to him. We may have the artistic faculty in us by Nature, but even if we have we shall lose nothing by learning the why and the wherefore of artistic composition. If we do not possess that gift, lack of it can, to a great extent, be made up by learning the principles which guide those who do possess it. There is no need to get book-bound. The principles, once grasped, are applied instinctively, and we forget the exact rules, just as an educated man generally forgets the exact terms of the rules of grammar after he leaves school, but retains the principles of them, and continues to speak grammatically.

"Just as in artistic photography, a man's making a special branch his particular study perfects him in that branch, so, in scientific photography, if his taste incline him to take up any branch of science he will be able, by fixing upon some special purpose for his work, to be of

more service to his fellow-laborers.

"Photography has now become one of the most important features

of scientific work, both for purposes of research and of record.

"The geologist has made considerable use of the camera, and there are often fresh opportunities, especially in a district where there are new railways, quarries, and other works. These are generally, in the case of railways, speedily re-covered with soil and vegetation, and thus lost to the geologist unless some record has been made while the strata are exposed. Besides new sections such as these, there are innumerable subjects for the geographical photographer, boulders and crags, contours, fossils, and deposits—these will all furnish work for the man who knows the science.

"What a world of subjects there is for the botanist. Those beautiful flower studies, of which so many have been produced in late years, belong, perhaps, more to the artistic than to the scientific side of our subject, and they form a worthy object for attainment in themselves; and what a field there is in the scientific portion of photographic botany. The growth and characteristics of plants and trees; the qualities of the timber, and the reasons for it; defects, and their causes; and, in conjunction with the microscope, the structure of plants, leaves and flowers, their growth and life history.

"To the antiquarian and architectural student, photography is invaluable. As in all the other branches of work, a photographer must know what to photograph, and what particular feature of his subjects he ought to display. An artist would, probably, in photographing a ruined abbey, choose a very different point of view, and aim at securing quite another effect to a photographer who was an antiquarian. The latter would, probably, be more concerned in depicting the details, while the first would aim at breadth of effect, or well-grouped lines. Not that the two objects are necessarily antagonistic. It is possible

that a position might be chosen which would suit both, but the probabilities are against this being the case.

"If all who are photographically inclined would take negatives of the various processes of whatever business they happen to be engaged in, we should have a series of representations of social life which would be invaluable to the historian in the course of a few generations.

"One might go on for some time suggesting other purposes to which photography could be applied, but I venture to hope that I have said enough to induce some to take up 'photography with a purpose.' I do not say that we are to exclude all other work, or even to have only one purpose. That would be to shut off one's opportunities too much. Nor is it wise, perhaps, for a beginner to settle down with his first plate to some special subject. A certain amount of experiment and plate spoiling is useful and almost necessary to him. But when once under way, with sufficient knowledge to guide him into the right track, the sooner the photographer settles down to a definite plan of work, the better.

"Although technical perfection in our photographic efforts is most desirable, I do not think a negative, print or slide should be rejected for a technical fault unless there is a certain prospect of its being replaced by a better."

#### THE PRINTING AND TONING ROOMS.\*

I AM going to ask your indulgence for a few minutes on some very plain talk on your most abused and ill-used department—printing and toning, or, in other words, the printing and toning rooms. I say your most abused and ill-used, because you give it your least attention, and, at the same time, expect the finest results—the finished picture. The old saying, "A carpenter is known by his chips," can be applied to the printer, for by the finished print you can tell the workman. We all have our individualities about our work, but it should have system. On the lower deck of a large steamer, in my earlier days, I once saw this sign: "A place for everything and everything in its place." It made an impression on me that I never forgot, and I think that motto should be placed in every printing and toning room and the theme carried out. Don't make them a dumping-ground of the gallery. Keep them clean.

The average printing and toning room to-day is literally stuffed full of old boxes, bottles, jars, pots, broken glass, negatives, etc. Clean them out, and leave nothing that will catch the dust or accumulate dirt, and insist that rubbish be thrown out of doors. Have a rubbish-box, and see that all rubbish is thrown into it, and insist that the box be emptied every day. Just try it, and you will be surprised what a difference it will make in your work; 'twill have a cleaner look in your eye; act as a caution to warn you of the impending danger of dirt.

The printing-room of your gallery should get as much attention from you as any other department.

<sup>\*</sup>Read at the Toronto Convention.

The average photographer seems to think that the printing can be done in most any place, and that the printer can get along with anything. You seldom find a printing-room with a changing-room, or the proper facilities for "setting up" a negative, where prints can be examined or trimmed, or paper cut without being exposed to the light. With the limited means he has to work with, your printer is bound to get careless and indifferent to his work.

Light-tight boxes or drawers for holding your prints after printing should be provided. A small one for cabinets and smaller prints, and a larger one for all sizes above Paris panels; these should be lined with dark cloth, and have a cloth flap that will exclude all light. The first print off should be marked on the back with a soft pencil, the style of mount and number of negatives, and all subsequent prints numbered to save handling. Putting prints in books after printing is not a good plan, as most printing paper used in these books contains more or less hypo of soda, used for bleaching and not thoroughly washed out. Then, again, after continuous handling they become soiled from dirty fingers, and as all printing papers are sensitive, you cannot be too careful. Do not handle prints after they are printed. A printer should insist upon this, and not allow others to handle them, for he alone is responsible for the cleanliness of his work. You cannot handle prints without the fingers coming in contact with the film side, and greasy, dirty or sweaty fingers will surely leave their marks, and sometimes not only the print itself, but others, will be ruined by coming in contact with it. Carelessness is the motto of a good many printing-rooms today. You may be ever so good an operator, make finely posed, nicely lighted, fully timed and perfectly developed negatives; poor printing and toning will kill your work only too easy, for by the finished print the public judge your ability, and it is that they pay for. Provide your printer with what he needs to work with, and see that he uses them. Don't give him a monkey-wrench or bar of iron, or an old pair of shears, to drive tacks with; get him a tack-hammer with a good claw for lifting tacks, it only costs 10 cents; provide him with tissue paper, paste, opaque, and a brush to put it on with; and, above all, a duster—and a good one-tacks, and some soft pastel in sticks, a plate of glass, a pair of good shears, and, above all, good trimming glass patterns.

Have a changing-table or bench large enough to accommodate all or most of your frames, curtained off, and proper shelves underneath to store away the frames when you are through printing; and when an order is finished take the negative out of the frame and put it in a case or envelope to save it from being broken or scratched. So many negatives are broken by being left in the frames and uneven pressure left upon them. You seem to forget that negatives are only glass, and glass will not bend, but will break—oh, so easy.

I would advise ground-glass for the printing-room. Of course, it is a little expensive, but the effects derived from its use more than pay the slight difference in the cost. At any rate, print in subdued light, then you get the full values of your negatives.

I would also advise plain printing. Of course, it is quite necessary

to have clean negatives for that kind of work, but the prints show up better than vignettes. If you do have to resort to vignette printing, make your board fit the subject and make it right. I find empty plateboxes or covers make excellent vignetting boards. I cut the opening at least an inch larger than I want to show, and cut the sides of the box so the bottom will come very close to the negative and the top the full length of the box. Cover the opening with tissue, and then use opaque to blend it with. "Strauss Marl" should be in every printingroom, not only for vignetting, but it is a great help to build up weak spots or hide defects in the negatives. When you have a negative with a weak and defective background, with the "marl" and a sponge you can do wonders. Try it.

As I said before, keep the printing-room clean. Use the broom and scrub-brush frequently; make even prints; use care and good judgment, and when you turn your work over to the toner, have it right.

For matt-surface paper a stronger negative is needed than for glossy papers. You can build up your negatives when they are weak, or strengthen the high lights when needed, by placing tissue paper on the outside of the frame and rub on some soft red or yellow pastel where you wish to hold the printing back. For instance, take a negative with a dark face, or part of the face in shadow, and the draperies strong. You can by this means hold the shadows back until the high lights are printed to a sufficient depth.

The toning-room is another source of all kinds of effects and defects. No matter how perfect the printing is or how good the prints, this department is where most care should be taken. Have plenty of room, and sinks large enough to hold your trays, and trays large enough to hold your prints, and plenty of them. It may seem a little on the "fairy-story" order to tell you that I have been in a so-called gallery and been given a common wash-dish and a water pail with the foil off, to tone a batch of prints with. Just think of it! and that man complained of lack of trade and hard times. Trays he knew not of. He developed his plates in meat-platters, and said they were good enough and cheaper.

I prefer papier-maché trays to any other. Of course, the large trays are more expensive, but with proper care they will last a long time. If you think you cannot afford them, get some boxes made of ½-inch stuff, 22 x 28 inches in size, with cleats on the bottom, and get the common oil-cloth table-covering at any dry goods store at 25 cents a yard, and 50 inches wide, and cover the same. They make good trays, and by re-covering when they begin to show wear, you will have good trays at a slight cost.

Don't allow truck to accumulate in the toning-room. If you can have it, oil-cloth on the floor will keep the water from soaking into the floor, and can be wiped up and kept clean. As most sinks are so small (it is an impossibility to empty trays without spilling some water on the floor), it were better to have a zinc floor put in with a drain at one end connecting with the waste-pipe—but have a washing tank. Of course, prints washed by hand are more sure to stand. Still, a good wash-

tank with a false bottom—a cane weave I prefer—with a siphon, is the proper thing. It's a good policy to have an overflow pipe also; but don't depend upon an overflow, for it costs too much to settle with the man down stairs the next morning, if Oscar should go away and leave the water running all night and the overflow should get clogged up.

Have shelves for your toning solutions and keep them clean. Have a rack to hold your toning trays, so they wont come in contact with one another, or where foreign chemicals will drip on them. Always wash your trays after using. If soiled, take a handful of table-salt and dampen it a little, and go over them; it will clean them.

Filing Away Negatives.—When an order is filled, print an extra of the head and tone and paste it on the envelope or negative sack. Always sack and number your negatives, as well as put the address on. It is handier to replace the negative, and, also, in case of two or three of the same party, you can show the customer a print of their duplicate order, when you get one. The sacks prevent your negatives from being scratched or harmed. Always varnish your negatives, after the retouching, with a thin varnish. It prevents the retouching from being rubbed off; or in winter, if you should be careless, and let a flake of snow or a sprinkle strike them, your paper don't stick to the gelatine and ruin the negative.

C. L. Weed.

#### SUBJECTS FOR EXPOSURE—HISTORICAL LEGACIES.

THE variety of subjects for exposure presented to the camerist is so vast that it would be almost useless to endeavor to enumerate them. Possibly almost all amateurs have tried portraiture with more or less success; in fact, it seems to be natural to them to commence operations upon their friends or the home circle, and it is, no doubt, very gratifying to be able to present one's friends with some of the



really homelike and natural portraits usually produced by the amateur; but the studio light and retouching are generally necessary to produce the finished portraits of the professional photographer, who has all the modern accessories conveniently at

hand at all times. Successful portraiture can only be accomplished after a very careful study of the light at one's disposal, and the exercise of much judgment in its application. All things considered, for a good portrait it may be wiser to invite one's sister (or one's friend's sister), to visit a good photographer's studio, and let the children bring the dog out on the lawn and keep him quiet, while his portrait is taken,

although some well-behaved dogs have been known to submit to a sitting without even moving their tail.

Little bits of picturesque scenery in country places are very often effective and pleasing, and many times may be brightened with figures harmonizing with the subject and surroundings not too prominent; but very often, upon looking repeatedly at a view with figures, one is apt



to wish the figures were not there, or that they would "move on;" and, for all time, probably, a corner of a pond, with no figures to break the harmony, will prove more pleasing and restful to the mind and eye. Although a duck pond without the ducks would hardly be complete, or a lily-pond without the lilies would hardly be a lily-pond.

More real pleasure and satisfaction can be gained by making exposures of places of public interest.

Many of them may have gained their fame in recent years, purely for the good deeds accomplished, or perhaps the literary work done, by those persons with whom they are associated, but who have passed away since and have left to posterity a memory which will be cherished indefinitely. The birthplace of George Peabody, the philanthropist, at Danvers, Mass., a simple cottage, which is a true type of the many New England country homes of the period of his birth, and is still preserved

in its original simplicity. "Oak Knoll." the simple country home of the late John Greenleaf Whittier. with its well-kept and picturesque surroundings, still occupied by relatives and carefully maintained by them, is also a type of a more modern New England home of the better class. charming place is also at Danvers, Mass.



In all the older settled parts of this country there are many such interesting subjects for the camera, with the additional charm of associations dear to the heart of all cultivated minds.

The rich legacies which history has bequeathed to some of the old cities and towns are not always appreciated by them until it is too late to restore the depredations made by the advancement of private or public pecuniary interests.

Salem, Mass., is an example of this; probably no town or city of its size has been more favored with heirlooms than this old city. The "Witch House" will always be an object of interest, and at present is a subject of disappointment, with its drug store in front, and a constantly decorated clothes-line hiding the ancient porch and stairway in the rear. Those who visit it cannot fail to be disgusted at the apathy of a

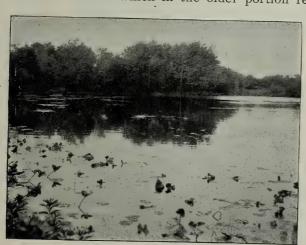
city which will permit such a constant source of attraction to it to be so disgracefully hidden from view.

The Nathaniel Hawthorne house, and the House of the Seven Gables, immortalized by him, are both rich legacies to the old City of Salem, and are both subject to the same criticism for the manner in which they are not maintained.



Such valuable and noted attractions to the better-informed class of traveling people should become the property of the city they honor and be cherished as they deserve.

The old town of Marblehead, Mass., also has many interesting historical houses which in the older portion remain in their original



condition, with the quaint, irregular (deserted) streets, devoid of sidewalks, making it one of the most interesting places for the camerist. Tucker House, built in 1640, still remains on its old foundation, abutting in the road in its original condition, although occupied still, and is the object of interest to a constant stream of

visitors (easily distinguished from the "natives"), who may be found wending their way through the crooked streets to view this and the historical old Tucker Wharf opposite. This old town of Marblehead has not recovered ground since it was devastated by conflagration some years ago, but its historical and picturesque attractions remain, and will prove to be its most lucrative feature if they are preserved as they now exist.



Birthplace of George Peabody.



Whittier's Home.



The Witch House, Salem.

Plymouth, Mass., alive to the value of its history, presents its relics of the past as they should be, and is reaping the harvest it deserves for assisting in nurturing a taste for the higher cultivation of the mind. Like the cathedral towns of the older countries, there is an air about Plymouth which is found in no other town in New England,

owing to its careful preservation of the valuable legacies which history has bequeathed it.

Every civilized nation has its history, and while the older countries may have age and climate in their favor for the more picturesque presentation of their historical objects, photographically considered there is much of historical interest in this country, and there are no better



The Tucker House, Marblehead.

object-lessons for the higher education of the mind than the actual buildings and homes associated with interests dear to the heart of all who take a pride in the advance made since the period with which they and their history are associated; and while the camerist can make views of them, it should also be his privilege to take every opportunity of urging the preservation of these national historical relics.

WALTER SPRANGE.

Colonel V. M. Wilcox, the president of the firm of our publishers, has just returned from Bloomsbury, Pa., where he went to take a principal part in the exercises commemorative of the part the 132d Regiment played at Antietam. From the local papers we learn that the Colonel was given a most enthusiastic reception, and his speech was one calculated to touch the heart of every American.

THE BULLETIN extends its heartiest congratulations to John A. Tennant, assistant editor of *Wilson's Photographic Magazine*, and trusts that his wife and little daughter will have a safe trip from England.

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All matter for the November issue of the Bulletin should be in our hands on or before October 20th. We shall be glad to publish short articles on matters of general interest and to reproduce any photographs sent to us which may possess points of an interesting character.

## USEFUL PURSUITS IN PHOTOGRAPHY.

T is pretty safe to hazard an opinion that the majority of those who take up photography do so with no further idea than of practicing it simply as a pastime, as an interesting pursuit which has the advantage of leaving something to show for the time spent in following it. It not unfrequently happens, too, that when the ordinary difficulties which every beginner has to encounter have been mastered, when the production of a negative of decent printing quality is no longer simply a matter of chance, and when in the acquisition of their experience every person, animal, and object about the house and domain that imagination can resolve into a fitting subject for a camera exposure has been exhausted, a time comes when enthusiasm wanes, and the camera and its appurtenances find their way by easy stages to the limbo of the box-room, there to languish in the company of the long-since disused croquet implements and relics of other diversions which for a short but brilliant season have dominated the household. Like every other pursuit which is followed in an objectless and desultory manner, photography will in time cease to charm, but there are so many ways in which it may be made useful and helpful to other pursuits that it is a pity to waste the amount which must necessarily have been expended on the outfit, to say nothing of the time and energy devoted to gaining a knowledge of how to use it. After the initial expenses, photography is by no means an expensive amusement if the results obtained can be put to any good purpose, and, indeed, it may often be made a means of adding to the exchequer, and that in a perfectly legitimate manner. There is nothing in the slightest degree to be ashamed of in accepting payment for time, thought, and labor, crystallized into an entity in the form of a photograph or a series of photographs, any more than there would be in accepting payment for the same time, thought, and labor resulting in a magazine article or a book, but we deprecate most strongly unfair competition on the part of those who call themselves amateur photographers with the already heavily handicapped professional in those branches of photography upon which the professional depends for his living.

The opportunities of making photography useful, especially in country life, are so many that one almost fears to begin to make suggestions for its application, having regard to the limitation of space allowable for such subject. In almost every branch of agriculture the methodical use of the camera would well repay the expense of the material used, and it is not too much to say that it is within the power of thousands of those who now practice photography as a mere pastime, to perform work of scientific importance by annotating by means of photography things which come under their observation in every-day life. The appearance and progress of growing crops under different modes of culture, the diseases, blights, and insect pests that they are liable to, and the effect of various treatments for their cure, all lend themselves to illustration by means of the camera, and, if a reasonable amount of knowledge and some system be brought to bear in obtaining these illus-

trations, the results cannot fail to be valuable to the community. One plant alone, the potato, would afford sufficient work for many seasons, and work that there is fame, if not actual profit, in the undertaking. In photography of this kind the amateur has the field entirely to himself. It is quite outside of the scope of the professional.

To the botanist the camera may be made an invaluable help. It cannot be made to do work that will replace the herbarium, but it can be made to do work that will vastly enhance its value. A dried specimen can show a great deal, but it can only imperfectly convey an idea of the appearance of the living plant. The latter, photography can be made to do. To the botanist, therefore, there is a renewed pleasure in store in obtaining photographs to supplement his collection, and there is the further incentive to work in this direction that prints would be gladly accepted by the British Museum and others having botanical collections, and perhaps in some cases they might be paid for.

In the stock-yard, the stable, and the kennel, photography may do good service; not, indeed, if only carried out in a purposeless manner, for there is little value except a domestic one in a photograph of a cow, a pig, or a horse. To be of value scientifically or for comparison, a photograph must be accompanied with particulars as to weight, age, measurements, or others appropriate to the subject. The photograph gives little other information than as to form, but that it gives as no other means can. But while dwelling on the useful applications of photography in the study of the animal and vegetable world, we must not omit some mention of its value in adding to our store of knowledge of the human economy. In every hospital and medical school its importance in illustrating phases of disease is fully recognized, but in this direction most amateurs can do but little to assist. In anthropometrical research, however, there is much that might be done to help those who labor in this field. An isolated fact in the growth of a child, such as the age at which it cuts its first tooth, is of no interest outside the circle of its kin, but such a landmark when it forms part of the complete history of the child's development may be of scientific importance. The life history of any child is of value, inasmuch as from such records many important facts bearing upon the effects of climate, varying conditions of food and living, and other external influences can alone be gained. A series of records of this kind, illustrated by photographs taken at regular intervals, would be doubly valuable. Here is a labor of love for any parent who may be induced to undertake such a work, and a further prospect of reward for his pains in the possible benefit his child may derive from the application of the knowledge to be gained from it.

Useful and interesting work for the camera may be found in recording the landmarks of the surrounding country—a new cottage is built, then another by its side, others are added until what was a verdant lane becomes a village; or perhaps, on the other hand, a building of some local or historical interest falls into decay and is pulled down. For a few pence a record may be made of each successive change in the topographical aspect of the locality, valuable in after years if not at

present. Still more valuable would be a systematic photographic survey of each county, such as is now being carried out in the county of Warwick. This is a work in which every photographer can aid. In the towns, where changes are more frequent than in the country, the opportunities are of course increased; in a few years a whole street sometimes becomes unrecognizable from its former condition, and scenes hallowed by events in the past are so altered that their interest gets lost. Most of us would feel an interest in our parents' birthplaces, the church where they were married, and other spots connected with their career. We can preserve for our children a semblance of some of these after time has defaced their originals.

Some stress has been laid upon the necessity there is, in undertaking work, photographic or otherwise, which is to be useful in scientific investigation, in proceeding methodically, and unless one has something more than ordinary knowledge of the subject which the work is to illustrate, the wisest plan would be to seek guidance. Fortunately, there is little difficulty in obtaining this. In every science, in every pursuit in which observation is a factor in progression, the assistance of the humblest worker who is content to do the apprentices' work until he has gained sufficient experience to make a pathway for himself will be welcomed, and no one who is in earnest need feel that he will meet anything but courtesy and consideration even should he ask advice from the highest authorities in the particular subject in which he requires it.—Alexander Mackie in *The Amateur Photographer* (England).

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The International Annual, which will soon be issued by our publishers, will be a book which will not fail to attract the attention of all students of photography. In the matter of illustrations it will, we think, be unequaled. It is true that there have been publications crowded with half-tone reproductions that teach no lesson, but in the "Annual" care has been taken to include only illustrations of merit that really illustrate some topic and teach something. Yet there will be more illustrations than ever before, and these will be of a more diversified character than heretofore attempted. Some of America's best professional photographers will present specimens of their work, and many amateurs of high standing have contributed photographs that will make the book a record of 1895.

In the line of articles, we feel we are within bounds when we say that the text matter of the 1896 "Annual" is simply invaluable. Many writers touch on color photography, and when the whole of their work is reviewed, the prospects of the realization of the dreams of early investigators seem bright. Of unusual interest are a series of articles on places of interest at home and abroad. Of these, "In Shakespeare's Country," fully illustrated, is not the least attractive. "Pictorial Possibilities," a splendid article for amateur and professional photographers, will be a revelation to many. An actual photograph and a reproduction in colors (from Nature) form other attractive features. As an example of 1895 presswork the book will be accorded a high position. The demand for these "Annuals" increases yearly, and we advise our readers to bespeak a copy at their regular dealers.

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By Stephen H. Horgan.

#### COLOR PHOTOGRAPHY.

THE dream of Daguerre is at last realized. Both he and his partner-inventor, Nicéphore Nièpce, wasted the best portion of their lives in the vain endeavor to fix the beautiful colors of Nature seen on the ground-glass of the camera. It has been in the minds of all photographers since. The number of patient experimenters who have given their time to researches in color photography will never be known, for the reason that their efforts were fruitless, and pride prevents men from publishing their failures. But the problem has at last been solved, and what was considered impossible but so few years ago is now in practical use.

Professor Lippmann, of Paris, has successfully recorded the colors of Nature on gelatino-bromide plates. Albert, Vogel, Kurtz, Bierstadt and others have first divided the colors of objects into three primaries, and then by superimposing them through the printing press, one on the other, have reproduced the colors of the original. Our Messrs. Ives and Gray have applied the same principle to lantern projection; and last, but not by any means least, Professor Joly, of Dublin, has devised a method of obtaining a color record in the camera, which can afterwards be applied to colored paper or other material, and, in a single operation, reproduce the colors of the original. As this operation can be done in the printing press, Professor Joly's invention is of great interest to process workers.

It would appear that the reproduction of color is likely to find the quickest as well as the widest application in the printing press, and will therefore come within the province of the Process Department of the Bulletin. Color photography will demand of its practitioners a higher knowledge of the principles of photography than was heretofore necessary in process work, and, to be successful, they will have to read and study as never before to "keep up with the procession." It is the purpose of the Bulletin to present to its readers examples of the best reproductions in color obtainable, together with the freshest information regarding the progress of these discoveries and practical methods of procedure.

The adage so often used by photographers, "Secure the shadow ere the substance perish," should now be changed to read: Secure the colors ere their substance fade.

## WOOD ENGRAVING A STEP BACKWARD.

We hear rumors that this or that publication is going to return to wood engraving, and abandon half-tone and other processes in the execution of their blocks. There is no danger of this, and for these several reasons: Publishers will not submit to the increased cost of wood engraving and its necessary electrotyping, nor the longer delay in its execution; neither will the artists welcome back the engravers whom they most often termed "wood butchers who mangled all the good out of a block, so that the artist was scarcely able to recognize his own work when he saw it in print." Engravers have a field for their skill in the finishing of half-tone blocks, and publishers will demand their working only in that way hereafter.

## THREE-COLOR PROCESS BUSINESS.

We are in receipt of examples of three-color process from the following six firms: The Columbian Engraving Company, Chicago; the Photo-Chromotype Engraving Company, Philadelphia; Mr. Edward Bierstadt, of New York; the Coloritype Company, William Kurtz, President, New York; the Photo-Chrome Engraving Company of New York, and the New York Chromatic Engraving Company.

The Columbian Engraving Company of Chicago show the largest quantity and greatest variety of work. One sheet sent out by the Miehle press as a printing exhibit contains thirteen subjects reproduced by this company. Their reproduction of carpets for Marshall Field, of Chicago, saves that firm \$50,000 a year in the excess of baggage alone paid by their salesmen to the railroads for trunks containing samples of carpets. By the three-color process, reproductions of the carpets can be bound in a sample book, or sent through the mails. This Chicago firm have received an order from a New York house to reproduce their carpets for \$40,000. A cigar manufacturer pays them \$35,000 for reproductions of an opened box of his brand of cigars. So much for the money in the business.

The Photo-Chromotype Company of Philadelphia present some most artistic examples of three-color. The reproduction of roses and vase is admirable. The work of this firm is signed Stewart, and if we mistake not, this was the name of one of Mr. Ives' assistants. If he is the same man, it would seem to show that the pupil is putting in practice that which the master has said so often is impracticable.

Mr. Edward Bierstadt's colortype work in three-color is unapproachable in its way. He is now about to utilize the advantage the typographic press will give him by making half-tone plates from his three-color negatives.

The Photo-Chrome Engraving Company of New York appear too modest about their three-color work. A bit of still life which they show is equal to anything that has been done, and yet Mr. Alfred Stieglitz, the artist of the firm, is seeking effects still higher before permitting them to bear the imprint of his company.

The Coloritype Company, of which Mr. William Kurtz is president,

is said to be filled with orders for ten months to come. The card showing a reproduction of Huyler's candy and the recent cover for *Munsey's Magazine* are exhibits of his work. Some of the work appears to have been printed from stone at a loss of crispness.

The New York Chromatic Engraving Company is the latest venture in the three-color line. They send a large fruit piece and some photographs of clocks. There are rumors of many other concerns engaging in this business, and at present the outlook is very promising for plenty of work in that line.

#### THE FIRST IN THE FIELD.

Mr. Louis Klopsch and the Rev. Dr. Talmage have shown me a number of their publication, the *Christian Herald*, with a reproduction of an Oriental scene on the front page printed by the three-color process. This is an example of enterprise that deserves the success that is assured it. This first number of the *Christian Herald* in three colors will have an edition of 1,000,000 copies. Their color work must not be confounded with that of the New York *Herald*, for instance. The writer introduced the color work on Mr. Bennett's paper, making only the black or key plate by photography, and printing in yellow, red, blue and black. The plates for the *Christian Herald* are made entirely by photography.

## AN IMPROVED HALF-TONE ENAMEL.

Le Page's glue	Ю. І.	
Le Page's glue	4 0	unces.
Albumen	2	6.6
WaterBichromate of ammonia		
N	0 0	
Gum acacia	0. 2.	
Water	····· ½ 0	unce.
Aqua ammonia	····· 8 o	unces.
Aqua ammonia	1 0	unce.

To use, take 3 ounces of No. 1 and mix with 1 ounce of No. 2. If the latter solution is kept well corked it will keep for a long time, while solution No. 1 will have to be mixed fresh every few days, if not kept in a very cool place.

## VULGARITY NOT ART.

WE notice that process engravers occasionally send out as a sample of their half-tone work pictures of nude women in some shameless and inexcusable pose. These pictures most often go in the waste-basket. There are other sinners in this regard responsible for publications that would have shocked pagan Rome for indecency under the guise of art.

## MOUNTING HALF-TONE BLOCKS ABROAD.

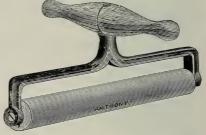
It is to be regretted that half-tone engravers do not pay better attention to the mounting of blocks. Even when really well mounted,

blocks are none too safe for these days of rapid printing on cylinder machines. "A few days ago," write a firm of printers, "we received a large block from one of the best firms of half-tone engravers. The invoice for it was about  $\pounds 9$ . When we laid it on the imposing stone, ready for locking up in the form, we found it stood nearly a quarter of an inch higher in the middle than at the two ends, and rocked like a cradle. There was not time to get it remounted, so we had to work the form off at half-speed, packing the block as well as we could, while the machine man was obliged to keep his eyes constantly on it, lest some accident should happen."— $Process\ Work$ .

"GILL'S Half-Tone Proofs," under a cover designed by Will H. Bradley, is at hand from the Gill Engraving Co., New York. It does not seem possible that half-tone engraving could reach finer results than shown here. The Gill Company was about the first to recognize the aid skilled wood engravers would be in finishing half-tone blocks, and their customers are glad to pay the increased cost.

#### ANTHONY'S SQUEEGEE ROLLER.

How many photo-engravers use a scraper squeegee, or even a piece of broomstick, to squeeze the air and water from between negative films and the glass support during the operation of reversing negatives, when they might have for 75 cents or a dollar a 6-inch or 9-inch velvet roller, with handle as in illustration, which does the work safely and perfectly.



#### TO USE ENAMEL SOLUTION ON ZINC.

ZINC will not stand the heat that copper does, hence the enamel solution cannot be burned in on zinc to the dark brown color used on copper. The following procedure will be found successful, however. After the zinc plate is coated with enamel and printed as usual, put the plate in a blue or other colored aniline dye for a few minutes. Then, after washing off the superfluous dye, soak the film in a saturated solution of common alum, when the dye will be found to acquire greater brilliancy. Wash off the free alum solution, dry the plate slowly at first, until all moisture has evaporated. Then burn in the enamel until the dye entirely disappears from the plate, and the enamel turns a straw color. Etch in a bath of equal parts alcohol and water, with 2 per cent. 40 degrees Baumé nitric acid. When the first etching has proceeded sufficiently far, the plate can be dried, rolled up with ink, dusted with dragon's blood, and treated as if it had been an inked albumen print dusted with dragon's blood in the beginning.

#### THE COLLOTYPE PROCESS.

Among the questions and answers to the London City and Guild's examination in lithography was the following, which is such a terse description of the collotype process that it is worth giving here:

Question VII.—Describe the process known variously as phototypie, lichtdruck, collotype, heliotype, etc.

Answer: The process known under the various titles of phototypy, lichtdruck, Albertype, heliotype and collotype, as well as Leimtype, consists in preparing a thick plate of glass with a finely ground face, upon which is spread a thin film of substratum consisting of silicate of soda, stale beer and water. This substratum is dried. The plate is then ready to receive the gelatine film. This film is made from Creutz's middle hard gelatine, bichromate of ammonia, liquor ammonia and water. This film is carefully spread on the substratum, and is then dried at a temperature not exceeding 110 degrees Fahr., in a drying box where light is excluded to a considerable extent and the heat can be thoroughly regulated. The dried films are ready for exposure in special printing frames, made very strong and fitted with numerous screws to force the film into contact with the negative. The exposure has to be timed by an actinometer. When the exposure is correct the plate is removed and soaked in clear cold water. This soaking continues, with frequent changes of water, at least changing the water half-hourly, until all traces of the yellow bichromate are quite removed. Then the plate is dried. When ready to print, the plate is again soaked for half an hour, and then treated with a damping solution of glycerine, ox-gall and water. The rolling up is commenced after the damping solution has soaked into the plate for a quarter of an hour. The rolling up is done with a good nap roller, covered with a medium stiff ink. which covers all the deep and sharp shades. The final rolling is done with a glue roller, covered with a thin ink. This latter may be tinted so as to vary from the other ink already on, and give a fine secondary effect. The printing is effected under a good pressure and at a very fair speed, considering the difficulties to be overcome. In printing, a mask of oiled paper must always be used to prevent any ink printing outside the actual picture.

#### COUNTERFEITING MADE EASY.

Some fifteen years ago government experts were studying the question as to the color of inks to print paper money with, and the prevention of counterfeiting by photography. The writer gave it as his opinion that the back of the note should be printed in blue ink instead of green, and the seal on the face of the note should be pink in color. Owing to our progress in color photography, these colors are no longer a safeguard, and Chief Hazen, of the Secret Service Bureau, had better take notice. The French government are awake to the possibilities of our recent discoveries in photography, and are printing their new notes in four colors, red and bistre (a brown pigment) being the prevailing tints. It is believed that the shades of ink they have adopted will baffle forgers, at least by photography.

### OUR FRONTISPIECE.

THE reproduction of a painting by Carl Weber, used as a frontispiece to the Bulletin this month, is an example of the three-color work of the Photo-Chromotype Engraving Company, of Philadelphia. It is a forerunner of the day, not far distant, when catalogues of paintings will be illustrated by this method. The finest photogravure printers in the world are developing processes for painting colored inks on photogravure plates in an endeavor to reproduce the tints of the original painting. Three-color photography will do this work accurately.

#### OBITUARY.

LEWIS PATTBERG.

THE name of Pattberg has for many years been associated with picture frames and plush and leather goods, and the death of Mr. Lewis Pattberg on July 27th from cancer in the stomach came as a shock to not a few photographers. Lewis Pattberg left Germany in his eighteenth year, after serving an apprenticeship in the bookbinding, leather and papeteric professions. For a time he worked on albums, an industry which sprang up at the time of the more general introduction of photography, somewhere in the fifties. Leaving this industry, Mr. Pattberg started to make passe-partouts, mats and display cards, all in great demand then among photographers. When the war broke out in 1861 he was one of the first to respond to President Lincoln's call for volunteers, turning his business over to his elder brother, Henry, who carried it on with the assistance of a younger brother, Hilarius. During the war he was in the Twentieth New Yorks, and saw active service in such battles as Antietam and Gettysburg, coming home, however, unscathed. Returning in 1863, he rejoined his brothers, and, after the retirement of his eldest and passe-partouts they ranked high among the trade, and finally added the production of fancy metal and velvet frames. In 1875 the demand for this class of goods was so great that the firm, to which another brother, Philip, had been added, decided to build a factory in Jersey City, where the business has since been carried on.

Lewis Pattberg was a genial man, and had hosts of friends, over two hundred people calling at the house at the funeral. He was a prominent member of the G. A. R., and a past master of the F. and A. M. He was fifty-four years old.

# ORRIN C. BENJAMIN.

A NOTHER pioneer has joined the majority. Orrin C. Benjamin was born in De Ruyter, N. Y., and moved to Jersey when he was about twenty years old, teaching school there. He bought a daguerreotype outfit, and utilized his leisure moments in making himself familiar with photography. After getting some finishing touches from R. A. Lewis he started in business in Milburn, N. J., moving to Rahway, and finally buying a leading gallery in Newark, N. J. Before the war he had two skylights, and did a great business. In 1865 he was burned out, losing nearly everything, there being about \$10,000 worth of pictures hanging on the studio walls. He bought a farm at Elmira, got back some of his original strength, and opened a gallery in Corning, and finally settled in Orange, where twenty-eight years ago he founded the business now carried on by his son. About seventeen years ago he met with an accident while driving a fast horse, and since then had suffered considerably. He died on September 9th. Orrin C. Benjamin was a man of very striking appearance, was always ready to lend a helping hand, and will long be remembered by his photographic friends.



SOUTH AUSTRALIAN PHOTOGRAPHIC SOCIETY.—The Secretary sends us the rules of this Society, and from the appendix we see that its members have the use of a very good photographic library. Its officers are: President, E. W. Belcher; Vice-Presidents, A. W. Dobbre and A. Scott; Treasurer, R. B. Adamson; Secretary, P. A. Roberts; Assistant Secretary, H. M. Paterson, Australasia Chambers, Adelaide.

International Exhibition of Amateur Photography, Berlin, 1896.—In August and September, 1896, an exhibition for amateur photographers will be held under the patronage of the Empress Frederick in Berlin, in the new Parliament Building (Reichstag). Full information is promised later.

PHOTOGRAPHERS' ASSOCIATION OF MISSOURI.—The Convention held at Chillicothe on August 20th was a distinct success.

The officers for 1896 are: President, William Latour, of Sedalia; First Vice-President, J. L. Douglas, of Columbia; Second Vice-President, J. C. Hogadorn, of Butler; Secretary, G. W. Curtis, of Kansas City; Treasurer, A. S. Robertson, of

CHICAGO SOCIETY OF AMATEUR PHOTOGRAPHERS.—The opening meeting of the season 1895-96 was held on Thursday evening, September 12th. There was a full attendance and much enthusiasm, giving promise of a prosperous year and an interesting exchange of slides. Of interest to the readers of the Bulletin we may note a demonstration of Aristo-Platino paper by that genial hustler, Mr. Frank Doyle. To him our society is under obligations for the knowledge imparted. Of particular interest was the toning with platinum subsequent to the gold toning, this producing a beautiful carbon effect. We do not hesitate to recommend our sister societies of the Interchange to arrange for a similar demonstration.

We have been informed by Manager Beach, of the Lantern-Slide Exchange, that he has arranged an interchange with the Japanese and also with a third English society, so that the coming winter will bring us a fine collection of foreign slides for study.-W. A. Morse.

PHOTOGRAPHERS' ASSOCIATION OF CANADA.—By the courtesy of Mr. George Gilson, editor of the Canadian Photographic Journal, we are able to present our readers with Mr. C. L. Weed's paper, as read before the Association at its meeting in Toronto last month. We learn that the convention was a distinct success, the discussions on printing methods, lighting of subject and development of plates being productive of much useful information. It has become the custom at these conventions for some really able men to volunteer their services, make a few introductory remarks, and then to good-naturedly submit to a volley of questions, such as would stagger the ordinary individual. Messrs. Hetherington, Decker and Bassett are, however, old hands, and are always equal to any emergency. The P. A. of A. Convention at Chautauqua will be the greatest effort in the line of photographic reunions.

# Anthony's \* Photographic \* Bulletin,

EDITED BY

CHAS. F. CHANDLER, Ph.D., LL.D., and FREDERICK J. HARRISON,
Aided by a Corps of Practical Photographers.

DEVOTED TO PHOTOGRAPHY AND PHOTO-ENGRAVING.

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The Bulletin goes directly into the hands of the practical Photographer, and its value as an advertising medium cannot be too highly estimated.

E. & H. T. ANTHONY & CO., 591 Broadway, New York.

#### NEW BOOKS.

LA PHOTOTYPOGRAVURE À DEMI-TEINTES, by Julius Verfasser; translated into French by M. E. Cousin. This is a French edition of Verfasser's book, "The Half-Tone Process," and is published by Gauthier-Villars et Fils, Quai des Grands Augustins, 55, à Paris.

DICTIONNAIRE SYNONYMIQUE, by Anthony Guerronnan; published by Gauthier-Villars et Fils. This is one of the most valuable works issued, and was compiled at no little expense and labor. The scientific and technical words used in photography are given in French,

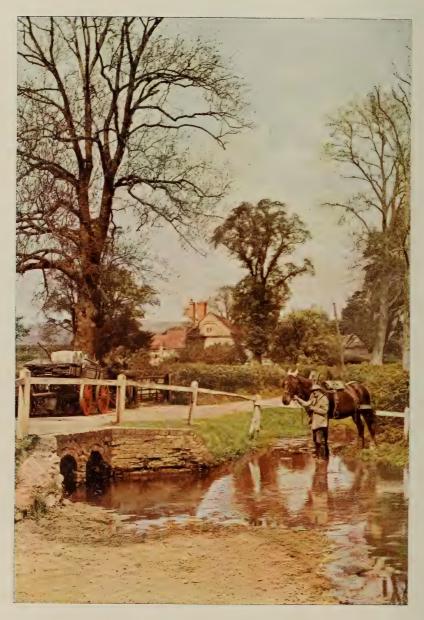
German, English, Italian and Latin. To the translator it will be invaluable.

STENOPAIC OR PIN-HOLE PHOTOGRAPHY, by F. W. Mills and A. C. Ponton. "The results produced by it, when suitable subjects are chosen, are certainly very beautiful. The obtrusiveness of detail which is almost always produced by a photographic lens may be avoided by this process without introducing fuzziness." All who love to stray out of the well-worn path should read this book. Published by Dawbarn & Ward, London, England.

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See description.

# ANTHONY'S

# Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

VOL. XXVI.

NOVEMBER, 1895.

No. 11.

## OBJECT IN PHOTOGRAPHY.

THE October issue of the Bulletin was largely devoted to "What to Photograph" in distinction to "How to Photograph." It is averred by some that photography, especially amateur photography, is slowly becoming a back number; that the interest once manifested is

dying out; that the general public has switched off and is bicycle mad; that the next thing will be the horseless carriage; and so forth. Yet manufacturers of photographic goods were never busier than they are to-day; there were never more manufacturers; there were never more periodicals devoted to photography; and there were never more photographers, both professional and amateur. Photography is not a craze, it is a necessity. It is not transient; it is ever-abiding. Its votaries are legion. It is, however, true that the efforts of amateurs are largely misdirected. In fact the large majority of amateur photographers have no object in view save the uncapping of the lens, or the snapping of the



Group by Aldrich & Otto.

shutter, on any and every object that may possess a momentary interest for themselves or their friends. It is not surprising, therefore, that except at certain periods of the year—around vacation times—the interest in photography wanes somewhat, and the series of articles on what to photograph and what to do with the photographs when made, with which the photographic journals have recently been filled, are doubtless due to the realization on the part of the authors of the fact that an enormous amount of energy is being wasted, with a consequent dropping off of interest on the part of many.

Similarly with professionals. The same old style has been religiously followed year in and year out, few new departures made, and depression in business is the cry. Depression in business is, often as not, due to lack of interest on the part of the buying public, and such lack of interest is largely due to the constant dishing up of old viands, with which the said public is well-nigh nauseated. A change is desirable. If not a change to color photography, then a change in methods of presentation of the pictures, a change in posing and lighting effects, a change in printing materials, a general awakening from the torpor into which so many of our professional brethren seem to have fallen. The public ever craves for something new, something different from last year's product, and the prosperous professional is he who is on the qui vive for new accessories, new materials, new methods of presentation. Some steps have been taken already in this direction. The old ugly mount, forever white and glaring, with its ultra glossy print and its bold staring gilt imprint, has been replaced by the daintily-tinted mantello mount with a matt-surface print and an imprint without color, simply embossed on the card. The photos are delivered in neat tissue enclosures and envelopes, and a higher standard thus created. But the work must go on, for competition is keen and the public critical.

The amateur photographer tires, and should tire, of his usual product and must seek pastures new, or give up from sheer tiredness. Photography without an object is poor work; in fact it is all work and no pleasure. Professional and amateur must recognize in photography a means to an end, and must have a very definite idea of that end when a knowledge of the capabilities of the means has been acquired. Materials are of little account. "The most miserable photograph contains just as good material as the most beautiful and ennobling one. What makes the difference? The mind of the creator." Photography without thought, without mind, without ideas, without object, is valueless. In our last issue, Walter Sprange touched on a subject that might well interest our amateur readers, the photographing of historical legacies. To those whose leaning lies in other directions, home portraiture offers wide scope. And let such work be undertaken, not with the idea of exposing as many plates as possible, but with the desire to create a picture. Pictures, not views, in future.

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Two photographs of lightning, by W. N. Jennings, appear in "The International Annual," and will attract considerable attention. More of our amateur friends might take up this branch of photography. We shall be pleased to reproduce any interesting lightning photographs sent to us.

## CHRISTMAS CARDS-A NOVELTY.

NOVELTIES are usually looked for around the holidays, and both amateur and professional photographers will welcome a novel means of distributing their products.

The amateur photographer has for some time bewailed the lack of a dainty mount for the presentation of his work to his friends, particularly at the festive season of the year that is now approaching. The giving of albums, and such like, is accompanied with no little expenditure, and, besides, such a present is oftentimes too cumbersome and inapplicable to the situation. A dainty embossed and tinted mount,



with suitable inscription, and with the proper place for a cabinet or carte-de-visite photograph, has certainly been in demand for some considerable time. The half-tone cut accompanying this article shows ten such mounts of various designs, all of which are dainty in the extreme, and are suitably inscribed. Each mount opens, and on the inside is a place for the mounting of a cabinet or carte-de-visite photograph. These mounts are specially adapted to the mounting of matt-surface prints, and when such prints are mounted, the card holding the print may, if desired, be rolled through a cold burnisher. A portrait of the donor, a view of the donor's residence, or an interesting picture of any sort, mounted on one of these cards, makes a dainty Christmas gift.

Professional photographers have, we think, neglected a source of advertising, which, while it may be slightly expensive at the outset, is bound to bring returns. The average professional seldom puts in sufficient time in educating himself, and in striving after certain effects with models, who, from practice with him, have become trained. But such practice is bound to develop in the professional an increased sense of the artistic, and an increased capability for producing the artistic. Negatives made with this object, that is of giving practice to the operator, and of enabling him, when occasion arises, to tackle with confidence special effects, cannot in any sense be called wasted. Apart from the instruction imparted to the photographer, the value of which cannot be estimated, these negatives may serve an extremely useful purpose as an advertisement. Photographers do not advertise properly nor judiciously. The best form of advertising is not to make flaring announcements in the newspapers with catchy headlines. These will only catch a class of trade that is, perhaps, undesirable, and will not appeal to the family trade, which, after all, is the mainstay of the photographer's business. The distribution, about this season of the year, of a dainty study, properly mounted upon one of these Christmas mounts figured in the cut, would, we think, do more towards attracting trade to the photographer than any other form of advertising. Principally it would open the eyes of the public to the fact that there is perhaps no better present to make to one's friend than a properly executed portrait of oneself, and that there is no better way of presenting it than when the said portrait has been mounted on one of the above-mentioned Christmas mounts.

We believe that the photographer would add considerably to his business this Christmas if he would adopt some plan similar to that we have outlined. Novelties are ever in demand by the public, and in no other business are they more desirable at the present time than in photography.

"The fools we have always with us," quotes the *Photogram* in writing up "Free Portrait Frauds." England and Europe generally seem to be badly afflicted with these swindlers. America used to be their happy hunting ground, but in one or two western towns shining examples were made of a few of these frauds and the effect was to clear those sections entirely of the breed. Rapid flight, with a rope and a gun or two in the immediate rear, is calculated to put an end to any further efforts in such localities, and to cause the flighty ones to seek countries where the public are more gullible, and justice much slower if more dignified.

It is said that J. Traill Taylor will retire from the editorship of *The British Journal of Photography* in March next, and that Thomas Bedding, who for the past four years has been assistant editor, will take his place.

At the Detroit Convention, 110 out of the 117 exhibits were on Aristo-Platino paper.

#### "THE INTERNATIONAL ANNUAL."

BY the time this issue of the Bulletin is in the hands of our readers, the eighth volume of "The International Annual" will have been issued. The history of this "Annual" shows a steady rise in excellence, both in point of reading matter and, perhaps more markedly, of illustrations. The first volumes that were issued contained little in the way of illustrations in addition to the actual photograph; but in the volume that has just been issued will be found a series of photo-engravings that fittingly record the rapid strides that have been made in methods of photo-reproduction. The frontispiece is an actual photograph printed on Aristo-Platino paper, and it will serve, we think, as an object lesson, not only in printing and mounting, but in posing and lighting. Another illustration of considerable interest is a reproduction in colors from Nature, furnished by Macfarlane

Anderson, and printed by his Phusochrom process. With regard to the photo-engravings, these are made by the leading photo-engravers in this country, and the photographs are from such prominent photographers as Landy, McCrary & Branson, Elmendorf, Baker's Art Gallery, Hastings, Gridley, Hemperley, Parkinson, Newman, Dodge, Rockwood, and others who are well known to our readers. In addition to some thirty full-page illustrations, there are innumerable half-tones illustrating the various points touched upon in the reading matter.

The contributors to the "Annual" are men of high standing in photographic circles, and the matter is certainly up to date in every particular. Color photography is discussed by many who have given this problem serious consideration, and the prospects of an early realization of the dreams of pioneer workers are good. An article of more than ordinary interest



SATISFACTION.

is one by Manly Miles, on "Colors from Black and White." "Pictorial Possibilities" will be a revelation. The author takes a boy at the awkward age and photographs him after the manner customary to amateur photographers, with the usual result. He then, in some five or six well-chosen illustrations, shows how easy it is, by placing the subject in familiar surroundings and giving him something to do, to obtain a natural picture instead of a wooden image. Shake-speare's country is described and fully illustrated, and this article will prove delightful reading. A. J. Henry, of the United States Weather Bureau, gives much useful information on the subject of "Cloud Photography." The beginner will find useful hints on every subject, the expert will delight in the theories advanced by the able contributors, will revel in a rich store of information on every

subject, and will criticise with interest the innumerable illustrations. The professional photographer will learn what others are doing, will get some hints from the illustrations, and will post himself on the latest developments in the art.

The "Annual" is certainly a dictionary of photography, a universal guide, giving useful information on every subject. The tables and formulas have been revised, and will, we think, be of great service to photographers in general.

## ARTIFICIAL LIGHTING IN THE STUDIO.

WITH the approach of dark days and uncertain weather the many advantages of a system of artificial lighting in the studio become apparent. The absolute freedom from uncertainty as regards the light, the power of working full time every day, rain or shine, the possession of a constantly uniform, easily controllable illumination, the banishment of leaky skylights and the possibility of occupying a ground floor with the power to choose location, increased opportunities for display and absence of stairs—all these are points for the professional photographer to ponder over. In these days of competition and progress, the successful photographer is the progressive one. Photographers have, perhaps naturally, looked askance at the proposed usurpation by the electric light of the position so long held by the sun, and have waited to hear the verdict of those who had the courage of their opinions and installed the light a year or so ago. An answer is given to the doubting ones in the excellent study, by Geo. Hastings, of Boston, which we have reproduced in half-tone in this issue of the Bulletin. This is only one of some fifty pictures sent us in response to an inquiry as to how the light was working. It is a practical proof of the excellent results obtainable by the aid of electric light and a convincing testimony of the high opinion that Mr. Hastings entertains for this method of illumination. Mr. H. N. Gale, of Bristol, Conn., sends us a batch of prints of the finest quality and a letter expressing his entire satisfaction with the light. In addition some forty or fifty prominent photographers are using the electric light for their work, and in no case whatever have we heard of complaint.

For the benefit of those who have not yet had the principles of this method brought to their notice, and to refresh the memories of those who have, we offer a terse description that will, we think, be found acceptable at this season of the year. The light itself is furnished by an automatic self-feeding electric arc lamp, which, when working on the continuous current, runs absolutely noiselessly and smoothly. On the alternating current, which is in some few cases the only current obtainable, the lamp works smoothly, but with a constant sound, which, however, has not been found to interfere with the comfort of either sitter or operator. This lamp gives a light equal approximately to 5,000 candle-power, and when used properly permits of a correctly timed exposure being made in about two seconds. The special lamp we are

writing of needs no further attention than replenishing with fresh sticks of carbon as these are burnt out. The entire mechanism is automatic, and the light is turned on or off by means of a switch. In making inquiry as to the possibilities of setting up such a lamp it is necessary that the kind of current and the voltage be given, details which may be obtained from the electric light company whose mains are nearest. For example, the lamp with which the accompanying illustration was made is working on a direct current of 110 volts.

The light from this lamp is not used direct, but is reflected from a screen patterned somewhat after the ordinary skylight, the direct light being screened from the sitter by means of an iron reflector. The reflecting screen is best made of thick canvas covered with white paint, the usual dimensions being 10 feet long by 8 feet high, with a piece about 3 feet long projecting at an angle of 45 degrees from the top. On the side of the sitter remote from the light the usual double reflecting screen is used. By this system the ordinary skylight is practically reproduced, with the advantage that a uniform light, always ready for use, is obtained.



ORDINARY bar iron contains, according to H. N. Warren, appreciable quantities of both gold and silver, though not sufficient to make it worth recovery.

The English photographic journals are, as is usual around the exhibition period, teeming with abuse, both polite and impolite. Anonymous correspondents and virulent abuse seem a vital part of the make-up of the older English journals. The newer comers seem to have more dignity, and doubtless are published with the idea of supplying their subscribers with information on matters pertaining to photography.

In the recent Chino-Japan war a regular staff of photographers accompanied the army. The resulting pictures were not all that could be desired photographically, but will doubtless serve some useful purpose, if only as a war deterrent.

An English patent has been granted to George J. Atkins for "Improvements in the Manufacture of Mineral and Enamel Colors for

Use in the Production of Ceramic and other Photographs." The specification reads: "When ceramic or vitrifiable pigments are substituted for carbon (in the ordinary carbon process) it is found that, on sensitizing the tissue and drying it, there has already been brought about a similar chemical action to that produced by light, which renders the tissue or compound unfit for photographic purposes." The patent is claimed on a "method of rendering mineral and enamel colors suitable for photography by treating them with chromic compounds sufficient to saturate their metallic components before mixing them with the gelatine or other colloid substance for forming films." According to one method, "I grind the mineral or enamel color to a powder, and then treat it with a solution of chromic acid, or bichromate of ammonium, potassium or sodium, of a sufficient strength to satisfy the metals or minerals in the color under treatment. The resulting compound is then dried, or not,

according to circumstances, and may be mixed with the gelatine or other colloid, and made into tissue or film without fear of any premature action taking place when it is afterwards treated with the sensitizing agent."

An apparatus has been devised for measuring the duration of a flash of lightning. Inside a camera there is a small carrier which holds the sensitive plate. This is caused to revolve very rapidly. When the flash is photographed thereon it will describe a curve, making a certain number of revolutions around the center of the plate. As the number of revolutions per second is accurately known, the



number of revolutions on the plate will give the exact part of a second the lightning flash has lasted.

A DOUBLE tripod top is sold in England, the object being the making of stereoscopic pictures with one camera only. The ordinary tripod head has a board built round it with hole at each end for supporting the camera.

A CONTEMPORARY refers to the *Photogram* as "a London periodical of photographic nature."

In the *Photogram* for October, George Gillingwater, writing on the photographing of theatricals, says: That the smudgy results obtained

when "made-up" faces are photographed, are due to wrong lighting, to lighting the face in the same way as an ordinary sitter. The upward light of the footlights must be duplicated in the studio if the best results are to be obtained. This is done by placing some twenty 50-candle power incandescent lamps in position at the foot of the subject. The direct light is screened from the camera by a concave reflector, and the intensity of the light varied by interposition of tinted glass sheets.

Gold sulphide, precipitated by sulphuretted hydrogen, may vary in aspect from the soluble matter produced in a neutral solution to the dense black sulphide insoluble in water. According to A. Ditte, the addition of a few drops of dilute hydrochloric acid to the dark solution of the former, or to the solution holding a gelatinous precipitate of gold chloride in suspension, causes the rapid deposition of a black powder and leaves the liquid colorless.

KILBURN & CROSS, of Boston, sends us a booklet which shows them to be designers and engravers of no mean ability.

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THE "Year Book of Photography" will not, as hitherto, be published in December, but will be issued in the spring of next year.

Splinters of glass are sometimes found embedded in the film of the dry plate. If, when the negative is fixed, the part around the splinter is as perfectly fixed as the rest of the negative, the fault lies in the plate. If it takes longer, or if it is impossible to fix it on account of the film being encased between the two surfaces of glass, it is the result of careless handling.

It is said that the total number of stars visible to the naked eye in the whole heavens is about 6,000. With large telescopes this number becomes 50,000,000; while with a camera it increases to 160,000,000.

Not the least interesting picture in the eighth volume of "The International Annual" is "Maurine," by George Hastings, of Boston. Writing anent this, Ella Wheeler Wilcox says:

"I thank you for the photograph of Maurine. It is very beautiful—very artistic. I had not heard of the result of the Convention nor the award of the prize until you wrote.

"I am very anxious to see the photograph which received the prize. It would be difficult to excel yours it seems to me. The only criticism I can make upon it is that the figure of Helen, who is awakening Maurine, is not fragile enough for the character. Maurine is perfect, the room and general arrangement artistically beautiful. I am thoroughly delighted with it. Most sincerely, Ella Wheeler Wilcox."

#### LANTERN NOTES.

THE question is often asked whether it is better to produce lantern slides by contact or by reduction. In many cases reduction is a necessity, but, where it is not essential, slides may be produced by contact in every way equal to those made in the camera.

Don't fail to use a black felt pad in the printing frame when making slides. Make two exposures, one with and the other without the pad, and note the difference, both in handling and in the resulting slide.

E. W. Scripture describes a method of making lantern slides that may truly be called a mechanical method. A half-tone plate, or a zinc etching, is made from the object and inked with a fine ink, tempered to proper consistency with Calcutta oil and japan drier. A composition roller is run over the plate, and the image taken up on this roller is transferred to a sheet of glass by simply passing the roller over the glass.

A CLOUDY or rainy day permits the making of slides as good as those made with a strong light. It is only necessary to give longer exposure.

THE handiest way to test slides is with the lanternoscope. No fixing or bothering with this instrument, but an enlarged image that shows up boldly any defects.

A FLAT plush or velvet brush, wide enough to cover the plate in one sweep, is a handy thing for dusting lantern slides. Camel's-hair dusters answer very well, but care must be taken that there are no stiff hairs to scratch the film.

Limes for the lantern are sold in hermetically sealed tubes in England; one lime in a tube. This must be a great convenience.

Our readers who contemplate purchasing an optical lantern will do well to look at the line offered by J. B. Colt & Co. Their instruments are all reliable, efficient and handsomely finished.

E. Drew contributes an interesting paper on "The Lantern in Science Teaching" to *The Optical Magic Lantern Fournal*, in which he says: "There are five methods that can be adopted in optical projection, and by means of which a large number of illustrated experiments may be shown.

"The first is the ordinary method, as when a photographic lantern slide is used, and projected by condenser and objective.

"The second method is by throwing a shadow by taking away the objective, and, in some cases, by using the electric arc light and removing the condenser.

"Thirdly, the use of a vertical attachment, whereby objects that cannot be placed vertically can be thrown from a horizontal platform on to the screen.

"Fourthly, by using a pencil or parallel beam of light as a rod, which, by reason of the constant law of reflection, enables minute motions to be exaggerated and clearly seen by a large audience.

"Fifthly, by means of an arrangement called the aphengescope, whereby opaque objects of a limited size can be projected upon the screen."

#### COLOR PHOTOGRAPHY.

SPEAKING on the subject of color photography before the American Association for the Advancement of Science, Mr. F. E. Ives summed up the situation as follows:

"Three methods of reproducing the natural colors by photography are now attracting public notice. One is a direct process in the camera, known as the Lippmann process. Another is a composite process in which photography produces a record of color in monochrome, which record is afterwards translated into color again, either optically or by superposed color prints; this is represented by the photochromoscope and the natural color lantern slides of Ives. The third, known as the Joly process, is based upon the same fundamental principles as the photochromoscope method of Ives, but is an attempt to arrive at the result by a short cut.

"The Lippmann process is based upon the theory that if the light which forms the image passes through the sensitive film to a perfect mirror which is in contact with it, the reflected rays, encountering the direct rays, produce the phenomena of interference within the filmthe waves of light propagating in opposite directions causing the vibrations at certain intervals to be neutralized, while at others they are intensified, with the result that the photographic image is made up of strata of black silver deposit separated by clear spaces, the separation of the strata everywhere depending upon the wave-length of light acting in that part of the film. At the critical angle, such a photograph will reflect light, the color of which depends upon the thickness and separation of the silver laminæ, as the colors of the soap bubble depend upon the thickness of the soap film. In practice a 'structureless' film of bromide of silver in gelatine or albumen is used, backed with mercury. Very long exposures are necessary. Although thousands of exposures have been made within the past three years, I believe not more than one dozen good photographs of colored objects have been obtained, and in some of these, June foliage reproduced with all the variegated tints of autumn. It has been proved that this process can be made to produce all the colors of the rainbow by the action of monochromatic light, by simply varying the exposure; and this and other facts make it appear extremely doubtful if the results ever are or can be in strict accordance with Lippmann's theory.

"The photochromoscope system is based upon the established fact

that all other colors can be reproduced to the eye by mixtures of three spectrum colors-red, green and blue violet. Three negatives are made, each by the joint action of the respective spectrum color and all others into which it must enter in the reproduction, and in due proportion, as indicated by physical laboratory measurements of color mixtures. This is accomplished by making the exposures through selective colorscreens, adjusted to yield photographs of the spectrum having density curves like the curves of a diagram showing in what proportion the respective primary colors must enter into the mixtures representing the other colors in the spectrum. Such a set of negatives of any object constitutes a record of the colors of that object, and a positive from this negative record can at any time be translated in color by triple lantern projection or in the photochromoscope. In the triple lantern the record for red is projected with red light, the record for green with green light, and the record for blue-violet with blue-violet light; the images are superposed on the screen, and these three colors are then found to be mixed in such proportions as to reproduce every color and every gradation of light and shade shown by the object photographed. practice, the complete color record is now made on a single sensitive plate, at one exposure, and the translation of the record in color is most readily accomplished in the photochromoscope, a small table instrument, not much larger than a hand stereoscope. In this instrument one appears to see, not a picture, but the object itself. Permanent color prints can also be made from the photochromoscope negatives, lantern slides, or machine prints on paper, but the production of such prints involves complications and compromises which add to the difficulties and cost of carrying out the process, and subtract from the quality of the results.

"Joly, in place of three separate color screens, employs one particolored screen, which may be described as a mosaic of the three screens of the photochromoscope system. Such a screen, made up of narrow strips of red, green, and blue color, when removed so far from the eye that the lines are not separately perceived, shows no color, but a uniform gray tint, which may be made to appear white under certain conditions of illumination. Theoretically, a single photographic image, when made through a suitable selective parti-colored screen, and then viewed through another (somewhat different) parti-colored screen, properly registered, should show the same results that are seen in the photochromoscope. In practice, very serious difficulties are encountered. With parti-colored screens of three hundred lines to the inch, which I believe is much finer than they can be made really perfect, though not fine enough to permit of using the pictures successfully in the stereoscope, a lateral movement of  $\frac{1}{600}$  inch of the screen upon the photographic positive will change a pure red to purple or yellow in the reproduction. Used as lantern slides, under conditions which approximately fulfill theoretical requirements as to color reproduction, at least five times as much light is required to project them as to project the color-print lantern slides made from photochromoscope negatives; and the color lines showing up separately give the effect of a colored picture on ribbed paper."

## BINARY PICTURES.

Thas frequently been observed that when the world is ripe for the reception of a new idea, or for the germination of one that has been floating in nubibus, that idea suddenly germinates almost simultaneously in different places, rendering it a little difficult to affix the parentage upon any one individual. We leave to psychologists the onus of explanation, as this is more particularly in their line of thought. The nearly simultaneous discovery of the planet Neptune by astronomers of different nationalities will at once be suggested to the minds of readers as a noteworthy example of this idea; but we have at present in our mind's eye something of a very much inferior caliber, nay, ludicrously so in contrast with that just cited.

Photographic doubles! By whom were they really invented? It seems almost impossible to associate their inception with any person in particular. It is known, or, at any rate, has been stated that the idea was coeval with the daguerreotype; but, if so, it appears to have lain dormant, until about thirty or thirty-one years ago it assumed a tangible shape and became developed all over the photographically civilized world. It remained for a little time, became one of the wonders of the period, was amenable to high development and puzzling examples, and gradually passed out of the ken of most. Although occasionally met with, and, as we have found, still practiced by some, the production of doubles may be relegated to the position of being nearly an unknown art, having fallen into a state of desuetude much as the production of stereoscopic photographs had well-nigh become previous to its renaissance of a few years ago.

A "double" or binary portrait may be described as a picture in which an individual appears in two different attitudes or characters, a once common example of this being a man seen playing chess with The photographer who engages in this sort of work must possess considerable diversity of the inventive faculty, so as to compose his subjects in a variety of positions. What struck us at the time as forming the most diverse and attractive series of compositions we had seen was some cases full of doubles which are being exhibited at the door and in the vestibule of the studio of Mr. Arthur Nicholls, of Sandown, these being both technically and artistically of a high order of merit. In one, a tailor in his shirt sleeves is engaged in taking the measure of a visitor (himself) for a suit of clothes. Another represents a little girl who has fallen asleep on a grassy lawn immediately underneath the window of a house, by the wall of which she is being supported, not dreaming of the rude awakening to which she is just to be subjected, for, from a window above, she herself is seen projecting her head, and is about to throw a bucket of water upon the sleeper below. Or, again, a man in full Chinese costume is engaged in conversation with a plainly dressed Englishman, close examination revealing their identity. These and many other like subjects show the nature of the effects capable of being obtained by the binary photograph.

We now proceed to indicate the means by which these curious pict-

ures are produced. It goes without saying that there being two independent exposures, one-half of the plate must be shielded while the other half is being exposed. This is effected by various mechanical means, such as having in front of the plate two doors hinged at the sides and meeting in the center, or by two sliding shutters drawing out at the sides and meeting in the center. In taking a picture, say, of a lady playing on a pianoforte, with her duplicate standing at the end, the flap at one side is closed so as to show the performer only, and the exposure is made. The lens is then capped, and the lady, rising from her seat, takes her previously arranged position at the end, with her face expressing either admiration, severity or horror at the performance to which she is listening. The previously opened flap is now



Negative by E. B. Core.

SUNBEAMS.

closed and the closed one opened, special care being taken that no movement of the camera itself takes place. The lens is then uncapped, and the second position is thus secured. On developing, no line of junction of the two exposures can possibly be seen—that is, provided the two flaps have been properly adjusted. It is better that these flaps be not quite close to the plate, but placed about an inch in front of it. This causes a certain softening of the edges, by which the one line of junction is blended or vignetted into the corresponding line of the other.

During the year when this fad was on in full force we had a camera altered so that the duplicating action was situated in the camera instead of being attached to the dark slide, as it originally was. This was attended with a marked advantage.

It is our belief that if those professional photographers who are experiencing bad times would introduce this system of binary portraiture,

and do it really well, both as regards technique and composition, it would tend to give a healthy impetus to business. This would be more particularly the case in towns or cities less favored with a large population than the metropolis, and in which the recognition of the sitters would prove less difficult than in London.

Although any camera-maker would make the necessary fittings to enable these binary pictures to be made, the final adjusting of the flap or sliding shutters ought to be made by the photographer himself, for in this lies the success of a junction between the pictures that is incapable of being discovered; for if the edges of these shutters are too far apart, or not far enough, a line will be apparent in the center. This line may be too white or too black, but the correct distance will be easily ascertained on trial. In one we had fitted into a quarter-plate camera, the shutters, which were made of thin zinc, were so far apart as to show a thin streak of light between when closed.

In looking over a collection of prints taken some years since, and in which were included some binaries, we came across a half-plate land-scape print in which was a figure of a young lady repeated five times in different positions. This was not, however, made by means of the binary camera, but by the pantascopic camera of Johnson & Harrison. This kind of camera, now exceedingly scarce, travels slowly by clockwork over an angle of 120 degrees, and it was only necessary for the subject, when once the exposing slot in the camera front had been seen to have passed her first position, to dart forward to a second position, previously marked, and await the passing of the camera to assume a third, fourth and fifth position, in each of which she was depicted with perfect sharpness.—The British Journal of Photography.

## PHOTO-CERAMICS BY THE DUSTING METHOD.\*

**4**3.-

I we coat a glass plate with certain gummy and moisture-attracting substances in combination with bichromate of potassium, or ammonium, we render it sensitive to light in a manner somewhat similar to the carbon process. In the latter plan, however, a color is intimately mixed with the film, and the action of light, rendering the gelatine insoluble (more or less), binds the color in varying degrees throughout the film. When the film is treated with warm water, all the soluble portions are washed away, leaving only the insoluble parts containing color. It will thus be seen why we must use a negative in making a carbon print.

The dusting-on process, while similar to some extent, is different in one great respect, viz., there is no pigment whatever in the film. The action of light renders the bichromated film of glue, and other substances, incapable of attracting moisture from the air, whereas those parts protected from the light retain their gummy nature in a more or less degree. The image is formed by the adherence of a dark-colored powder to the gummy parts. It is, therefore, necessary to print under a transparency.

Many dusting-on formulas have been given from time to time in various photographic publications, and all are more or less suitable to ceramic work.

The following original formula gives the best results in my hands, as I find the film capable of holding any necessary amount of color in the deep shadows while

retaining purity in the high lights—a combination unattainable by other formulas I have tried:

A. (Organifier):	
Le Page's fish glue 1 0	unce.
Glucose	ounces.
Water to	6.6
B. (Sensitizer):	
Ammonium bichromate 1 o	unce.
Water toıo o	unces.

For use, take equal parts of A and B, and filter through paper. Coat plate glass with this sensitive mixture, and dry before a fire, or over a gas stove, being careful not to over-heat the plate.

In contact with a clear transparency, the exposure necessary in bright diffused daylight will be about ten minutes, or from one to three tints of the photometer, according to the density of the transparency.

Upon removing the plate from the printing frame, it must be dusted with a vitrifiable powder of the desired color, applied with a camel-hair mop or a tuft of wool.

After the plate is sufficiently dusted, it must be coated with plain collodion, and, when the film is set, plunged into a bath of—

where it should remain about ten minutes. It must then be washed in several changes of filtered water. The edges of the film may now be loosened, and the plaque or tile must meanwhile be placed on a support, face up, in a basin containing water, and saturated solution of fused borax, in equal parts.

The film of collodion may now be detached and turned over in a basin of filtered water containing the plaque, and brought into position by means of a camel-hair pencil. Remember the film must be turned over—that is, so that the collodion shall rest directly upon the tile. If the powder rested directly upon the tile, the image would become detached in fragments directly it was passed into the muffle.

The plaque supporting the image must now be dried in a current of air (say by fanning), and will then be ready for firing.

The best furnace for firing plaques up to 12 inches square is known as the "tile-painter's furnace." The heat must be brought up very gradually while the plaques are within it, and directly the full heat has been reached the gas is turned out, the chimneys covered, and the whole apparatus left until cold.

The muffle furnace is more suitable for firing small enamels on copper plaques. Heat may be generated very quickly, and the enamels are passed into the muffle (or oven) as soon as the heat has arrived at a cherry-red. It is well to support the enamel on a lump of fireclay, and warm it up well at the mouth of the muffle until the film has blackened, then pass it right into the hottest part, where the blackened film will soon burn away and the image become once more visible and brilliant. The enamel may then be withdrawn and cooled and retouched if necessary. I strongly urge readers to give a trial to this most fascinating process, as the results cannot fail to give lasting pleasure.

Useful and decidedly ornamental teapot stands may be readily made by preparing vitrifiable transfers on tiles, which may be sent to the dealer who supplied the materials to have them fired. Directly confidence is felt in the process I feel sure many readers will set up furnaces of their own, and do their own firing. This will prove an additional pleasure to a careful worker.

There are a few points in the foregoing that may perhaps prove misleading to beginners without a further word or two.

For instance, the organifier may be prepared according to many various formulas, and different ones would probably work well with certain colors.

The formula I have given is the one that has been found in practice to work best with the color I have named.

Other formulas have not had a sufficiently dust-holding capacity to ensure a thick



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AWARDED "SPECIAL PRIZE" AT DETROIT CONVENTION.

"While she spoke, My heart writhed in me, praying she would cease." MAURINE. LIBRARY OF THE UNIVERSITY OF ILLINOIS enough deposit of vitrifiable powder. On the other hand, there are some colors that would probably have a superior affinity for other organifiers.

In the same way it may quite easily follow that where the foregoing organiser is used in combination with some other color, the film may apparently be fully developed, and charged with vitrifiable powder; yet in reality (owing to the presence of a superabundance of flux in the color) the image, after firing, may be weak and washed out.

Another thing that will be well to notice is the different class of glaze used upon pottery ware.

The glaze used upon enameled copper tablets is a soft one, into which the image is very easily vitrified; but most pottery ware is covered with a much harder flux, which does not melt except at a long-continued heat, such as is acquired in a potter's kiln.

Such ware is unsuitable for use in an enameler's furnace, owing to the time necessary to secure vitrification, but in a very short time china plaques having a suitable soft glaze will be on the market.

W. ETHELBERT HENRY.

## TONING AND FIXING.

MY reason for writing on the above subject is because I have seen so many prints of my amateur friends faded and flat for want of proper toning and fixing. They use a combined bath, overwork it, or use it too warm.

A combined bath may tone and fix a few prints all right, but there it ends.

Tone and then fix is the only proper method; then wash your prints thoroughly, and you are sure of permanent results.

How shall I make my toning bath?

Take a sufficient quantity of chloride of gold in solution, neutralize it by adding a saturated solution of soda carbonate C. P., or a solution of 1 part sodium borate (borax) and 2 parts sodium acetate, and then add enough water to make bath work in about ten minutes.

It does not make much difference what bath you use if you know it, and you must know it to get the results you desire.

The only way to know your bath is to use it until you master it.

Then you may try another and master it. When you have gone through the list of alkalies this way, you will know which one suits your purpose best.

In fixing, do not be afraid of the hypo; use it strong, r to 8, and plenty of the solution, and also keep your prints moving.

From ten to twelve minutes will be long enough to dissolve the silver chloride in the prints.

It is important to have the fixing bath strong if you desire permanent prints. A hypo solution 1 to 8 will dissolve more silver chloride in ten minutes than a 1 to 20 solution would in thirty minutes from the same print. Hypo is cheap and should be used strong, then thoroughly eliminated by using plenty of water. It is just as important to keep the print moving in washing as in the toning or fixing bath. If you have running water that changes entirely every two or three minutes, and keep your prints moving, they will be thoroughly washed in an hour. I have prints in my possession on albumen, gelatine and collodion papers that have had anything but careful use or care, some of

which have been exposed to sunlight for several months, unprotected from changes of atmosphere, etc., which are just as bright as when they were first finished. If you want to do good work, you must not be in a hurry.

If you will follow my outlines I am sure that you will have good results and permanent prints.

CHARLES W. CARD.

[Mr. Card sends us two excellent photographs of Gould Memorial Church, Roxbury, N. Y., printed on Aristo, Jr., paper. They bear testimony to the efficacy of his methods.—Eds.]

### TITLES OF PICTURES—A POSTSCRIPT.\*

In last year's "International Annual" (page 19) I was permitted to offer one or two observations on the importance of fixing upon an appropriate title. Perhaps I may be allowed to add a short postscript in part explanatory of what I have already said—this because some have misunderstood my aim—and partly suggestive.

First.—I do not approve of the plan of going out with a camera, without any definite object—just potting around generally—and then, after producing a result of an unexpected character, hunting about for a title that may make it pass muster, in fact an apology for a fluke. This is, I think, inverting the natural order of things. It seems more natural and rational to set out with at least some general sort of idea, perhaps not too rigidly confined lest it blind us to an unexpected beautiful aspect. For instance the time is spring, the day bright with gleams of sunshine, the place a river bank. We may seek to express the sentiment of joyful spring, or the play of sunlight among the half-open buds, etc. Or we may aim to convey the sentiment of quick change from sunshine to shower. Or the contrast of the old year of dead leaves and the new with its reviving influence.

But in any and every case we should aim to learn from Nature, to catch her expression, to listen to her suggestions. Never must we try to make Nature fit our own mood or fill a preconceived pose.

Secondly.—(Here comes our practical suggestion—a plan by no means to be despised.) Let me suggest you keeping a note book wherein you may put down ideas, suggestions, notes, sketches; in fact anything at all likely to help in the arranging or making of a picture. A group on the street may suggest something. A line of poetry may give you an idea. Sometimes one word may suggest a subject, e. g., the dimpled ocean, restless waves, lazy tide, creeping shadows. A sentence from a book of fiction, a line of verse, may give one quite a fresh and new aspect of things. Here are one or two suggestions for pictures from my favorite, Longfellow:

"Sail on ye stately ships," "Her figure was tall and stately," "Squares of sunshine on a floor," "Two fair maidens in a swing," "The distant mountains that uprear their solid bastions to the skies."

F. C. LAMBERT.

<sup>\*</sup> Received too late for "The International Annual."

## THE FIRST DIRECT PORTRAIT IN COLORS.

N "Wilson's Photographic Magazine" for October, there appears as frontispiece what is called a reproduction in colors of a living person, and with it the statement that the editor believes it is the first direct portrait in colors ever made of a living person. This was a very broad statement, and required but very little investigation for its refutation. We ourselves have made portraits in colors direct, and we have also seen portraits by Joly and McDonough that were vastly superior to the reproduction above alluded to. In fact, this frontispiece of "Wilson's Magazine" can hardly be called a reproduction from life, for while it is true that the subject may have posed for some forty minutes, it is also true that he must have been supported at every point, and that no small amount of retouching must have been done before the plates were ready for printing. One of the most interesting points and the one that prompts these remarks is a letter that we have received from Mr. Edward Bierstadt, and which we append in full. The portraits alluded to in this letter reached us safely, and are indeed portraits. The one of Mr. Bierstadt himself is simply superb and as far ahead of the picture in "Wilson's Magazine" as it is possible for anything to be. At the exhibition of the Society of Amateur Photographers last year four other subjects all taken in colors from life were exhibited by Mr. Bierstadt. It should be noted that in these cases the faces of the subjects were not the size of a ro-cent piece with two spots for eyes and an absolute lack of any expression in the face, but are large heads which convey so vivid an impression to the beholder as to almost make him believe that he is looking at the subjects themselves.

"Gentlemen,—I notice that in 'Wilson's Photographic Magazine' for October, in speaking of the frontispiece, the editor says: 'We believe this is the first direct portrait in colors ever made of any living person.'

"I send you herewith a portrait in colors of a living person made in July, 1890, and another of the writer made within a year; the entire time required for the last is five minutes for the three negatives. The portrait of the lady required ten minutes, including the changing of the plates, and in both cases the negatives were used without any retouching or painting out.

Yours truly,

"E. BIERSTADT."

# HEADS.

PERHAPS a more correct title would have been "Large Heads," but the shorter one will be more comprehensive, especially if we consider for a moment that the following remarks will treat upon heads taken direct in the camera, and not by enlargement. There is a motive for so taking heads direct which is comprised in the fact that they are usually truer to Nature than enlargements. Enlargements oftentimes exaggerate most alarmingly such slight distortions as are not noticeable in a small photograph; an ear, or a nose, or some other feature becoming out of proportion in the enlarged photograph. Further, as small heads are usually taken in conjunction with the rest of the body, it follows that there has seldom been that care bestowed upon the head to render its pose and lighting so perfect as would be

the case where the head is studied alone. The retouching of all large heads is inevitable, therefore it will be found that the direct negative lends itself with greater facility to the skill of the retoucher than would an enlarged negative.

A direct negative of a large head permits the concentration of not only the skill of the photographer in respect of the pose and lighting, but usually secures the best

expression, a most important quality.

It is debatable ground, I know, but I incline to the opinion that large heads may not only be somewhat coarse in grain, but need not be absolutely sharp all over. As they are usually viewed at several feet distance—on a wall along with other pictures—it is the effect that must be considered, and minute detail is lost. A slight softening of the actual profile is often more desirable than a hard, sharp outline against the background.

A studio is not at all indispensable; very excellent work can be done in a fairly lighted sitting-room, the chief difficulty being to obtain the use of a room sufficiently long to permit of the use of long-focus lenses, which I hold to be of the greatest necessity to attain success. I have produced some very satisfactory results in an ordinary room which has three windows, and is much longer than broad. the model in the best-lit corner, I stand the camera in that corner near the windows which gives me the longest diagonal of the room, some 6 to 7 yards apart, and, arranging matters so as not to obstruct the door, I can then leave the camera safe in its corner while I pose the model. The room described is a drawing-room; by hoisting the blinds up to the top and just drawing the lace curtains over the three windows I can get a very equal lighting, when the sun is not on that side of the house. The distance I have named of some 6 or 7 yards between camera and model enables me to use very long-focus lenses, up to 18 inches, which will give a good-sized head at that distance, and allows of going nearer to obtain very large heads. use of long-focus lenses becomes absolutely necessary if we seek to obtain uniformity of definition along with absence of distortion. At a given distance, and with a given lens, at only a few feet from the model, it will be found difficult and sometimes impossible to obtain anything approaching equality in definition, and the effects of exaggeration of prominent parts will be fatal to success. When attempting to take a large head in a cramped space with a short-focus lens, as fast as we can get one feature in good focus another goes out of focus, and no compromise is possible except to produce a fuzzy negative which is sharp nowhere.

Again, long-focus lenses, at several yards' distance from the model, will permit the use of larger apertures, in relation to focal lengths, than are possible with shortfocus lenses, which must be stopped to such a degree that the exposure is seriously prolonged; in other words, the short-focus lens at close quarters will not work with

a large aperture and give good definition.

If for no other reason, short-focus lenses must be condemned for this purpose, because of the inevitable distortion or exaggeration, of which a few trials will convince. The slightest movement of the head, or the least alteration in the angle (relative to the axis of the lens), throws everything into confusion. I have noticed that the act of breathing throws parts of the head into and out of focus at each respiration.

Before commencing to take large heads direct, several things have to be arranged. Backgrounds will be required, and a number should be made of different tones or colors, to suit varying complexions or types of features, and to obtain any desired effect as regards principal lighting and relief. Sheets of strawboard of large size, and each with a hole punched in corners to hang up on nails behind the head, will act satisfactorily. They may be coated with distemper of any shade or color from black to white, and probably half a dozen such backgrounds will meet all requirements.

Study the important matter of the principal lighting. While a diffused and equal light will be the first essential, we must also have means of adding to or reducing the dominant light, so as to obtain light and shade, relief, effect, and so on. In a studio furnished with a complete arrangement of blinds this becomes easy, but in a sitting-room many dodges have to be resorted to. If the room has two or three windows, dropping the blind in one may give the balance of light desirable, and en-

able one to direct the principal rays in such a manner as shall bring into prominence all the points of the features of the model. Models differ so greatly in the class of features that the keen observer of humanity will very soon see that he cannot treat all types alike; he will need to study their points, their style and their individuality, in order to do justice to the excellence of his model. I might almost go as far as to say that no one pose and lighting will be equally suitable for all classes. Let us assume that the model is a feminine beauty. The first consideration, no doubt, will be the manner of dressing the hair. The present fashions are so elaborate and ornate as to introduce some little difficulty to the photographer, by reason of the extremely complex and florid styles adopted by many ladies. I was riding up to London a few days ago from a small riparian resort—it was Henley—and in the carriage there were several ladies. One inquired of another, "Does Gladys wear her hair high?" This gave me a clue; in fact, a whole homily passed through my mind based upon the inquiry I have mentioned. I gathered, I think correctly, that Gladys, in this particular instance, might be assumed to be most bedecked if her hair was "high!" Now, I am not going to quarrel, but I shall straightway assume that Gladys is my model. It's not the least use of my pointing out to Gladys that her towering hair elevation quite equals the length of her face; that's got nothing to do with me; I am only a photographer, and she isn't going to change the style of arranging her hair to please me! Not likely. But when I get Gladys into the posing chair I can deal with her just as I like, and she won't know it. If her superstructure is to my mind out of all reasonable proportions I shall drop the camera to below the actual horizontal line; and I shall persuade Gladys that a slight inclination of her head (which dwarfs the superstructure) is the most becoming. Of course, she takes my word for it instantly, when I tell her it is most becoming; that's just what she wants and expects. Having gained my point so far, I have next to consider whether the style she adopts is the "fluffy" or the "compact." I should prefer the latter, because loose hairs give great trouble by reason of their getting out of focus or blurred by the least motion of the head. All you can do is to suggest that a little "smoothing down" be permitted, but that will not take place at the expense of the multitudinous curls and other adornments, and you will have to do the best you can and be subordinated to fashion. The color of the model's hair will probably produce some trouble. The vagaries of modern feminine fashions have introduced some remarkable tones, dyes or "nuances," many of which it would be impossible to describe. They range from tow, or flax, through all the shades of color until they reach a mahogany or bronze effect. Many of these colors are very non-actinic, and frequently come forth as brown or black. You must struggle with this difficulty as you did with the towering superstructure; isochromatic plates will help you a good deal, especially if you use the yellow screen.

You must expose fully for heads; if you want to obtain the greatest softness, with delicate gradation in the flesh, you must avoid having to push development. Long development or forcing will most certainly produce harshness, excessive density on all prominent parts of features, and too much contrast, and the hair will always be darker in the finished print than it ought to be. It is really best to overexpose and control development; the result may be flat unless you take care, but a flat negative will give the retoucher something to do, and high lights can always be introduced in retouching. By giving full exposures such blemishes as freckles are reduced in their assertiveness, but under-exposure will bring them out with unwonted strength. Full exposure, and a developer weak in pyro, are conditions favorable to success.

When posing the head, study the effect of raising or lowering the camera from a central horizontal line, which may be considered the nose. Some types are best suited by bringing the head vertical and making the axis of the lens in a line with the nose. Others, again, are best when the head is slightly inclined towards one side; and you have to find out which will be the best angle for the camera. There are certain formations of heads where it would be undesirable to give great force to high cheek bones, just as it is advisable to diminish the appearance of double or triple chins, if the model is "inclined" to *embonpoint!* 

Study the exact amount of profile necessary to secure the very best effect for the

particular head under treatment, especially as regards the showing of any part whatever of the off side of the face. Some heads must be taken in profile only, as high cheek bones or fleshy cheeks mar the effect of an otherwise perfect profile. The deviation of an angle of a quarter of an inch will spoil the effect; I have seen this change happen between focusing and exposure, the model having moved slightly. The head-rest may be used under many circumstances, and in some cases is necessary, but as a rule the pose is more natural when it is absent.

The dimensions of the head on a given plate should always allow plenty of margin to trim the print to the most effective size; if the head is to be vignetted—a very desirable method—plenty of room will be required. On a 12 by 10 plate if the head is 7 inches long that will be ample, but regard must also be had to the fact that female profiles frequently come out as broad as long, by reason of the elaborate dressing of the black hair, and you must then be guided by the width rather than by the length of the head.

I have not alluded to the question of printing or toning, preferring to give my allotted space to the production of the negative, upon which too much time cannot be spent if the highest result is to be attained. I could not do better than urge the necessity of studying the lighting of the model—a dummy would do to practice on—study the effect of direct light on a profile as against side light on the same, and study the altered condition of things when there is very little dominant light, but that used is so diffused and softened and produced chiefly from the surrounding objects. In all cases top light must be avoided. In a room this difficulty is rarely encountered; in a studio it frequently is, and in the open air it always is, and therefore in attempting heads in the open air care must be taken to reduce the top light by a screen or roof. I must add that I succeed better in a sitting-room than I ever did in the open air; the light does not vary so much and is more under control.

The taking of large heads will be found a pleasant, interesting and profitable line, and therefore suitable to amateurs and professionals alike.—Technique in *Photographic Scraps*.

### PHOTO-MICROGRAPHY.\*

THE representation of microscopic objects was one of the earliest applications of photography, and even as far back as 1802 fugitive photo-micrographic impressions on paper and leather were obtained by Sir Humphry Davy and Wedgwood. At first great things were expected from the new power thus brought into play, but, as results fell short of anticipations, the process came to be looked on with a certain amount of disfavor. Now, however, that a juster appreciation of the capabilities of photography prevails, this manner of delineating microscopic objects is much used, and many beautiful photo-micrographs are existent, showing a delicacy and fullness of detail which could not have been obtained by any other process. In a short paper like the present it is only possible to deal with photo-micrography in a very sketchy way, but it is hoped that even the meager information given may induce some members of the Society to take up a very fascinating branch of photography.

- 2. Some slight knowledge of the microscope is necessary before any attempt can be made to use the instrument in connection with photography, and, of course, before any really good work can be done, a considerable amount of facility in using the instrument and in the management of light must be attained. However, as very little practice, and a not expensive outfit, will enable many interesting photographs to be taken, it is hoped that beginners may not be scared by the imposing outfit recommended in the catalogues of many dealers in scientific instruments.
- 3. The picture of a microscopic object should show all the details with as perfect distinctness as possible, but where the object to be represented has any appreciable thickness, the whole of the details are only visible through the microscope by successively changing the focus of the instrument to suit the principal planes of the subject. A microscopic illustration is consequently a diagram showing, as if they were simultaneously visible, details which can only be seen at different focal distances. These requirements impose a limit to the application of photography, for, if we

attempt to change the focus of the microscope during exposure, a confused negative will be the only result. It is, therefore, obvious that the flatter an object is, the more suitable is it for photographic reproduction under the microscope, and that it is hopeless to try and take in one operation a subject having much relief. The greater the magnification employed, the more limited is the depth of focus, that is, the thinner is the portion of the object clearly visible at one time. Hence, irrespective of the difficulties in the manipulation of high powers, a flat object is the easiest to photograph, where the structure can be properly shown under low magnification. Good photographs can, however, be obtained under very great amplification, with skilled manipulation and suitable lenses, for the reason that high-power subjects are very thin, and that one position of focus embraces all the planes necessary for serviceable representation. The most satisfactory field for photo-micrography lies at the extremes of amplification, from, say, magnifications of 20 to 70, and from 500 to 1,500 diameters. Subjects requiring objectives of 1 inch to 1 inch focus for their examination will probably be found the most difficult to photograph.

- 4. Although medium-power objects cannot be photographed to advantage in one operation, it is, of course, possible to take a series of negatives of the most important planes, and combine the results into one picture. In delicate subjects this is not very easy, but it is worth trying, especially if the operator has facility in drawing. Another method adopted with success consists in painting out on the negative the indistinct portions, and taking an under-exposed print on smooth bromide paper. This positive is used as the basis of a diagram which can be filled in by hand, and which, when worked up in india ink and pencil, presents the appearance of an elaborately finished drawing. A treatment of the difficulty, which has been recommended by some authorities, is to take in the first instance a photograph under a low degree of magnification, and afterwards enlarge it by any ordinary photographic copying process. This method has the advantage of shortening the time of exposure, but necessitates the focus of original negative being extremely sharp.
- 5. Photography as applied to microscopy is further complicated by the differences in transparency, and the great contrasts in color which are frequently present in the same object. In ordinary photography the first difficulty is not met with, as objects are illuminated by reflected light, and variations in opacity do not influence the quality of the negative. In the microscope, however, the majority of preparations can only be viewed by transmitted light-that is, light which passes through the object, so that the resulting negative is very largely affected by the color contrasts, and the variations in transparency of the subject to be photographed. The yellow color of many anatomical specimens so interferes with the transmission of light as to almost preclude the possibility of making a photograph. Again, the thinness with which modern sections are usually cut renders them too actinically transparent to be photographed with low powers, but at the expense of prolonging the exposure from three to four times, this may be overcome by the interposition of a screen of yellowish green glass. Where great differences in color are present in the same preparation, or where non-actinic colors, such as deep brown, prevail, orthochromatic plates offer decided advantages. Many dark-colored objects, such as insects, may be bleached by prolonged maceration in turpentine, while sections of dark woods may be treated in nitric acid.
- 6. The only absolutely essential apparatus required for photo-micrography are a few good object glasses, with some type of stage and illuminating arrangement, and some form of camera or its equivalent, whereby the picture formed by the objective may be received on a sensitized plate. A very large number of arrangements have been devised to meet these requirements, but it is impossible in this paper to more than discuss them in a general manner. It will be convenient to consider photo-micrographic apparatus as divided into four classes, as under:
  - (a) The attachment of a special camera to an ordinary compound microscope.
  - (b) The combination of an ordinary camera with a compound microscope.
    (c) The substitution of a darkroom for the camera, and the use either of an ordinary compound microscope, or a system consisting of stage, objective and mirror.
  - (d) A combination camera and microscope forming one piece of apparatus.

- 7. A very simple method of effecting the first arrangement (a) is by attaching a pyramidal light-tight box to the microscope, the small end of the box fitting closely to the eye-piece, and the large end being adapted in the usual way to take a focusing screen and a dark slide. The focusing is effected by the adjusting screws of the microscope, which can be used either with the body horizontal or vertical.
- 8. The second arrangement (b) is still easier for all who possess an ordinary photographic camera. It merely consists in the insertion of the eye-piece end of a compound microscope, placed with the body horizontal, into the lens aperture of the camera. The space between the microscope and the woodwork of the front must be carefully closed to exclude light. When working with lamp-light, any black cloth packed well into the space will answer all purposes. The eye-piece of the microscope may or may not be removed; it is simpler not to do so, as its presence permits of a short camera being used, and the focusing screws of the microscope remain within reach of the hand. Most of the well-known microscopists recommend the removal of the eye-piece, as its use involves a loss of light, but in this case some mechanical arrangement must be devised to actuate the focusing screws which will not be in reach. Dr. Woodward in place of the eye-piece employs a special combination, which he calls an achromatic concave. Dr. R. Neuhauss has found that the ordinary eye-piece can be used instead of a projection ocular for throwing the picture on the focusing screen. The lenses of the eye-piece are separated a little distance, and an additional diaphragm is fitted on. The arrangement is simple. A paper case or tube,  $2\frac{1}{2}$  centimeters long, is fitted on to the brass tube, the internal diaphragm remains in its original position, while the new one is fitted over the evepiece by means of a short movable tube. The nearer the objects to be photographed are to the focusing screen, the further must the lenses of the eye-piece be removed from one another.
- 9. The third arrangement (c) may be exemplified by the plan adopted by Mr. Wenham, who dispenses with a camera, and uses instead a darkroom. This room he closes with a shutter having a circular aperture 3 inches in diameter; upon the outside of the aperture is placed a reflector of some type, which can be actuated from inside the room. The microscope body is arranged horizontally on a table or bench, so that its axis, if prolonged, would pass through the center of the hole in the shutter. The object to be photographed is suitably placed on the stage of the microscope and near to the inside of the aperture, the light around the stage being cut off by a black cloth. A vertical stand, grooved to carry a sensitized plate or a white card, completes the arrangement. The enlarged view of the object to be photographed is first projected on to the white card and focused; the light is then cut off, and the sensitized plate is inserted in the grooves which held the card. The plate is then exposed by re-admitting the light for the necessary time.
- 10. The fourth arrangement (d) need only be briefly referred to. A stage with mirror and objective is attached to the front of a special camera provided with necessary fittings for adjustment.
- II. The next point to be considered is illumination. The sun, the electric, oxyhydrogen, magnesium, or zircon light, and the ordinary paraffin or petroleum flame, are the usual sources of illumination. Of these the majority of operators prefer sunlight, but, in using it with any form of condenser, care must be taken to guard against the intense heating effects of the rays, which are liable to injure the object, and, even in the case of high-power objectives, to uncement the lenses. In the case of subjects requiring long exposure, it will be necessary to supplement the apparatus previously enumerated by a heliostat in order that the solar beam may be reflected in a constant direction. Without a heliostat, rapidity of impression is absolutely necessary for the most perfect definition. Various devices have been resorted to for overcoming the heating effects of the condensed solar rays, the most common plan being to reflect the light through a cell filled with a solution of sulphate of copper, the blue color of which filters off the heat rays, while allowing the actinic components of the solar beam to pass through. Another plan is to break up the light by means of a large prism of wide dispersion, and then intercept the rays of



PRESS OF A. H. KELLOGG, NEW YORK.

ELECTRIC LIGHT STUDY BY GEO. HASTINGS, BOSTON.

[MADE WITH ANTHONY'S ELECTRIC LIGHT APPARATUS ON CLIMAX PLATE.]

UNIVERSITY OF ILINO'S

the red end of the spectrum. In this way the defects of chromatic aberration may be avoided, and a more perfect definition obtained. A very ingenious method proposed by Mr. Reade for using his hemispherical condenser with a solar condenser is given in "How to Work with the Microscope," by Dr. Beale. The rays furnishing light and those giving off heat having different degrees of refrangibility, we have here the cone of light rays formed within the cone of heat rays, so that, when these rays cross the axis, their respective positions are reversed. The hemispherical lens is so arranged that it is separated from the principal focus of the heat rays by its own focal length, when the principal focus for light will be found at a greater distance than that for heat. The heat rays will thus be rendered parallel, while the light rays will converge to a second focus, furnishing an intense light unaccompanied by heat. The same object is effected by Dr. Woodward, by placing an achromatic lens at such a distance from the achromatic condenser of the microscope that the solar rays are brought to a focus, and begin again to diverge before they reach the lowest glass of the condenser. This method is so successful that enough light can be obtained to give excellent definition on a cardboard screen under a magnification of 5,000 diameters.

12. When using sunlight, it will sometimes be found that diatoms and soft tissues, when illuminated with parallel rays, will produce interference lines. A ground-glass screen, preferably greased, interposed between the mirror and the condenser, will remedy this inconvenience. The electric light, by exaggerating the effects of light and shade, is well suited for delicate objects possessed of little contrast. In using this illumination the pencil of light should be first rendered parallel by means of the condenser usually supplied with electric lamps for this purpose, and then condensed as with solar light. The electric light is said by some authorities to be cumbrous, unsteady, expensive and troublesome, but these remarks would appear to be directed against the arc light, as the incandescent lamp seems free from these objections. The magnesium and oxy-hydrogen lights are of special service in photographing soft tissues, and, no interference phenomena presenting, the greasedglass screen can be dispensed with. The light is concentrated on to the lower lens of the achromatic condenser, and the ammonia-sulphate cell should invariably be used. The fumes of magnesia, which give trouble by the deposits on surrounding objects, may be collected on a muslin chimney made by covering a spiral wire column 5 feet long, the cloth being folded in similar fashion to the bellows of a camera. The zirconia light is produced by placing in the oxy-hydrogen flame a mass made by strongly heating in an iron mould a paste composed of zirconia mixed with a solution of boracic acid. This illumination is even more brilliantly luminous than lime light. Zirconium is very resistant, and gives a regular, steady flame. It will be found, however, that petroleum light is sufficient for almost all purposes, and any good lamp may be used, but the ordinary microscopic lamp, which can be raised or lowered bodily, will be found most convenient. A very intense illumination may be obtained from paraffin oil by using it in a triple-wick lamp, with a condenser to parallelize the rays. This pencil will, of course, have to be rendered convergent before it enters the optical portion of the microscope. With all lighting the achromatic condenser must be carefully centered, as otherwise unequal illumination will result. After centering, the condenser must be moved back until the field is uniformly lighted.

13. Certain objects, such as diatoms of close striation, require the use of very oblique light, which can be obtained in the following way, given in *Davis' Practical Microscopy*. "A parallel pencil of solar rays from the heliostat and plane mirror is intercepted by a blue cell and diaphragm, which only allows a circular pencil of half an inch diameter to pass. The light enters parallel to the optic axis of the microscope placed in the usual position for photography, but at a lateral distance to the right or left of 3 inches. If the light is intercepted by a large achromatic prism of a focal length of about 3 inches, the desired obliquity can be obtained without difficulty. The best result is obtained when the rays are concentrated to a focus upon the object, and it is indispensable that the stage of the microscope should be as thin as possible. The illumination thus obtained is, in general, sufficient to

produce negatives by the wet process up to 2,500 diameters with three minutes' exposure."

14. The magnified image of the object to be photographed can be focused by projecting it on to a white screen, or on to a ground or plain glass plate, or by examining it with the ordinary microscopic eye-piece. The ground-glass usually supplied with the camera is too coarse for fine focusing, and should be re-ground with the finest emery and water, or a focusing screen may be made by coating an ordinary glass plate with the following varnish recommended by Davis:

Gum mastic	40 grains.
Gum sandarac	160 "
Ether	4 ounces.
Benzol	11 "

This varnish is not easy to apply, as even the heat of the fingers is sufficient to make the coating immediately over them dry with a smooth instead of a matt surface.

If a piece of plate glass be used, the image is viewed by a focusing glass or eye-piece held against the plate glass, the focus of the lens corresponding exactly with the anterior surface of the plate. The simplest and, I believe, the best method of focusing is to use the ordinary low-power eye-piece, inserted into a series of apertures in a thin wooden board substituted for the usual ground-glass, care being taken that the diaphragm of the eye-piece is in the exact position that will be occupied by the film side of the sensitized plate.

15. In connection with focusing, it is to be noted that objectives being over-corrected, it frequently happens with low and medium powers that the actinic and visual foci are not coincident. The result of this is that a blurred and indistinct negative may be obtained, although the image viewed by the eye when focusing showed perfect definition. This drawback can be remedied by having the objectives specially corrected for photography, or by withdrawing the object glass after focusing a certain amount determined by experiment. The number of turns of the fine adjustment screw necessary to get the chemical focus is easily obtained by developing a negative taken at the best visual focus, and then withdrawing the objective till the image appears to the eye as indistinct as it is on the negative. I append the amounts of correction required by various objectives, which have been extracted from Beale's and Davis' works.

Beck,		inch	0 0	1	Browning,	4	inch	$\frac{1}{100}$
6.6	$\frac{2}{3}$	6.6	$\frac{1}{200}$ "		" "	I	"	$\frac{1}{400}$
	$\frac{4}{10}$	6.6	$\frac{1}{1000}''$		"	$\frac{1}{2}$	"	$\frac{1}{2000}$
Dancer,	2	"	$\frac{1}{200}$	1	"	$\frac{1}{4}$	"	nil
٤ ۲	$\frac{1}{15}$	6 6	nil		"	18	"	nil

In Beck's recent catalogues, however, it is stated that this maker's objectives can be used without alteration, the two foci being so nearly coincident, and as far as my limited experience goes, I can substantiate the statement.

16. As in ordinary photography, many assert that the wet process gives results superior to the dry, but I much doubt this. If there is any difference, it is so slight that only an advocate of the wet plate can detect it. Gelatine plates should not be over-exposed, especially in the case of delicate work, or all the finer details will be lost. No precise directions can be given as to the time of exposure necessary for the production of a good negative. The exposure is largely dependent upon the quality of illumination, but even more so upon the nature of the object. By direct sunlight, with a not too dense subject, under the strongest magnification and sufficient weakening of the light by a filter, a few seconds should suffice.

CAPTAIN A. D. G. SHELLEY, R. E.

#### OBITUARY.

### THOMAS C. ROCHE.

DIED OCTOBER 22, 1895.

WITH profound sorrow we announce the death of Mr. Thomas C. Roche, a man who for more than thirty-three years has been associated with photography, and whose efforts towards the advancement of his beloved art-science have left an indelible mark. Photography, indeed, owes Mr. Roche a debt. Never so happy as when investigating some abstruse problem, always bright and cheerful and ready to assist, he leaves behind a memory that is ineradicable.

Mr. Roche commenced as an amateur photographer in 1858. In 1860 he brought into use aniline dyes for photographic purposes, for tinting albumen paper, varnishes for ambrotypes and for coloring photographic prints generally. In the spring of 1862, Mr. Henry T. Anthony induced Mr. Roche to adopt photography as a profession, and up to the time of his death he was one of the most valued employees of the firm of E. & H. T. Anthony & Company. At this early period there was an immense demand for first-class stereoscopic work, and Mr. Roche was the first to take a complete set of stereo negatives of Central Park, for which he was highly complimented by the New York Herald. During the war, arrangements were made by Messrs. Anthony with the Government, and Mr. Roche was sent to the front under General Meigs. Afterwards he traveled east, south and west in search of the picturesque, making upwards of fifteen thousand negatives. In 1877 he was awarded a silver medal for the best carbon transparencies, and received a similar award in 1878. In the same year he invented an improvement in collotype printing, which is now in commercial use. In 1879 he was the first to make and show proofs on gelatinobromide paper, for which he obtained a patent. In 1880, when Messrs. Anthony & Company took up the gelatine dry plates, he successfully demonstrated their merits in various parts of the country, and received large royalties for his invention of the Eastman tropical plate. Up to the time of his death he was experimenting in various directions, under the guidance of Messrs. Anthony & Company, and was a true lover of his profession. The many formulas and processes worked out by him while in the employ of Messrs. Anthony & Company are, of course, in the possession of the said firm.

With the passing away of Mr. Roche, probably the ablest and most widely known of photographic veterans leaves the photographic arena. His colleagues, among whom we were proud to reckon ourselves, have lost more than a friend. His employers have lost a man always faithful, always willing, always capable; and photography in general has lost one of its most ardent experimenters, one of its most able followers and one of its most brilliant lights. Of him it can be truthfully said, he had a host of friends and not a single enemy.

The funeral services were held on Thursday, October 24th, Messrs. Anthony being represented by Colonel. V. M. Wilcox and Mr. Richard A. Anthony. His fellow-workers at E. & H. T. Anthony & Company attended in a body, and sent a floral tribute to his memory, with the inscription, "We Miss Him." The honorary pall-bearers were: A. Bogardus, G. G. Rockwood, E. Bierstadt, D. Anderson, G. P. Hall and C. F. Coonley.

### OUR ILLUSTRATIONS.

THE exquisite color print that formed the frontispiece to the October issue of the Bulletin caused considerable comment, and, incidentally, largely added to our subscription list. As promised at the beginning of the year, the Bulletin keeps well in the lead, and avails itself immediately of anything new and novel, and likely to prove of interest and value. In direct line with this policy we have secured from the well-known Chicago firm, The Binner Engraving Company, a color print for use as frontispiece this month, which will, we think, command considerable attention. It should be particularly borne in mind that in this case the copy or subject was not colored, nor was a colored copy made from it for reproduction purposes; but the photograph was an ordinary one, and only one line negative was made. At our request, Mr. Oscar Binner furnishes the following details regarding this illustration:

"Replying to your letter, I will, as nearly as possible, give you full information in reference to the four-color frontispiece prepared for you by our house. To begin with, it would be well to say that in our business we have a great many calls from customers who want a color job to be used as a frontispiece, and who want some attractive illustrations. In a great many cases the copy furnished is in black and white, or is a photograph, and it is impossible to get colored copies of such subjects as they are in want of, so it has been customary for engravers to prepare a colored copy by painting with water-colors and then making color plates from the said copy. This, of course, is an additional item of expense, and in many cases the effect is not as good as is desired.

"The copy from which the frontispiece is made is nothing more than an ordinary photograph, from which a half-tone negative was prepared, this half-tone negative being made in the usual way adopted with any black and white half-tone engraving. After the negative was made, instead of making one impression, four impressions were made on copper, and, by etching, the plates were manipulated, each one for its respective color, the colors used being blue, yellow and red, and then after these three colors were prepared, the black block was finished in the usual way. When the primary colors were printed, the black was added, and the result is that shown in the frontispiece. The object is to manipulate the colors so as to obtain the same effect that Nature shows to the eye when you examine the image on the ground-glass of the camera. In this way we are enabled to reproduce the colors of Nature without going to the expense of preparing an elaborate and artistic colored copy. It is not necessary for me to state that the gentleman who prepared these four plates has for years been experimenting on this process, having first received his inspiration when he was making some photographs with a small camera, and we leave it to the readers of the Bulletin as to whether he has succeeded or not, and those who are practical workers in this line will readily see that this man deserves great credit for being able to manipulate a combination of colors in this manner without having a copy to follow. The subject of this picture is fully two thousand miles away, and the operator has never seen it. Many engravers are using the three-color process. By using the three

plates which we have, we can get just as good an effect as any three-color plates will give, but, by using the fourth, or black plate, it gives sharpness and finish to the picture."

Our two half-tone inserts possess no little interest for the photographer. The reproduction of Mr. S. L. Stein's picture is an exceedingly good one, and this is, we believe, the only reproduction made of the picture for which Mr. Stein was awarded the special prize at the Convention of the Photographers' Association of America, held in Detroit last August. It is an exquisite study, and Ella Wheeler Wilcox, the author of the poem "Maurine," writes to Mr. Stein highly commending his intelligent and artistic illustration of the lines of her poem. She says, "Your picture is very beautiful indeed, and the Helen is my ideal exactly. Her expression is wonderfully true to the poem. It is a very beautiful picture from the author's standpoint."

The other insert is from an electric light picture, one of a batch sent to us by George H. Hastings, of Boston, who is using Anthony's Electric Light System with great success. We believe it would be impossible to do any better with daylight. Further allusion to this system of lighting will be found in one of our editorials.

### A DAGUERREOTYPER.

CHICAGO has a photographer who don't stop short of anything but a brick wall when he has an idea to work out. His name is M. J. Steffens, and he has one of the finest and most complete photographic studios in the world. Everything in it, from cellar to garret, is the best that money could buy.

A couple of years ago Mr. Steffens conceived the idea that if the old daguerreotype could be revived and properly produced, it could be sold to certain people at a good price. The more he thought about it. the more he wanted to try it. He started out on a hunt for plates and material. The plates were what bothered him; but after a long hunt through New York and New England, he had a collection of the clean little silver plates to the number of about twenty-two thousand. He also gathered up a lot of the old-fashioned mats and preservers, and some of the finer quality of cases. On his return home, thoroughly satisfied with the success of his trip, he began laying plans for a special studio to make the "new" pictures in. Well, if some of the old-timers of forty years ago could step in and take a look through Mr. Steffens' daguerreotype studio and see the modern appliances he has for making the pictures, they would wish they were back in the business. studio is entirely detached from his photographic branch, being built upon the roof, with a little skylight, just the thing for bust portraits. The darkroom is complete, though very compact. The buffing machine, a good-sized wheel operated by electric motor, and working table, with vises and hand buffers, are all there and in apple-pie order. Mr. Steffens is just starting to make the pictures, has made quite a number of splendid specimens, and expects to do a good trade in the line this season.

"PROFESSIONAL POINTER."



By STEPHEN H. HORGAN.

### PROCESS WORK IN THE ANNUAL.

"THE International Annual," of Anthony's Photographic Bulletin for 1896, is the first of the photographic year books to appear. This annual is particularly rich in articles of interest to the process worker, though every line, from cover to cover, advertisements and all, is worthy of study by them.

There is space here to mention only the titles of a few of the subjects treated. Mr. A. C. Angerer, of Vienna, writes on "Fineness of Half-Tone Screens," and shows by examples how the result is affected. Charles Gravier, of Paris, contributes a paper on "Half-Tone Work." "Photography and Illustration" is the subject of a contribution by W. D. Farrington. A. H. Calderwood, of Albany, explains "Half-Tone Negative-Making." "Conditions Governing the Indirect Reproduction of Colors by Photography," is the timely topic treated by G. H. Niewenglowski, the eminent French writer on photographic subjects. Mr. Macfarlane Anderson describes the features of his multangular screen. Photo-engravers of the first class have contributed examples of their best work to its pages and in this way does "The International Annual" contain the record of progress in photo-engraving for the present year, valuable subjects for study now and for future reference.

### A NEW HALF-TONE SCREEN.

The multangular screen is the name of a new screen for half-tones, the invention of Mr. Macfarlane Anderson. It takes its name from the number of angles at which the two screens of parallel lines can be made to cross one another from a right to a most obtuse angle. It promises to give a variety of effects, and will enable us to dispense with the monotonous appearance of the present right-angle cross-line screen. Mr. A. C. Austin has resigned his position as manager of the Albany Engraving Company, to associate with Mr. Anderson in the development of the multangular screen in its application to three-color blockmaking. The new firm is the A. C. Austin Engraving Company, of Albany.

### STUDIES IN PROCESS WORK.

THE current magazines and weekly illustrated papers are admirable studies in half-tone. The quality of the paper and ink should be

first considered, then the fineness of the screen measured. How far the highest lights are etched, and how solid the deepest shadows are maintained, is worthy of note, and also how much hand engraving is done in the high lights, or on the margins of vignetted engravings. If the result is "smudgy," it is usually the fault of the pressman's endeavor to get off a large edition in the shortest possible time.

The Ladies' Home Journal is an exhibit of half-tone made with screens two hundred lines to the inch, too fine for the quality of paper used, but it is what the publisher orders. As half-tone plates of this fineness are liable to lose much in electrotyping, the cuts for this journal are printed from original copper half-tones only, there being as many as seven duplicate half-tones for some portions of the paper. As some of these plates must print an edition of two hundred thousand, which is more than an electrotype of the same subject would stand, it is an argument in favor of duplicate photo-engravings instead of electrotypes for large editions. If publishers but knew this, they would willingly pay the difference in cost of duplicates by photo-engraving, and it would result in increased business for process men.

Prices for half-tone work in England are at sixes and sevens, according to *Process Work*. The range lies between 4d. and 1s. 6d. per inch. "We can admire and honor the firm who can stand out for 1s. 6d. per inch in these days, but what can we say of firms who offer to do work at 4d.? It seems too much like 'hitting below the belt.'" The remedy suggested is similar to the one that is adjusting the same trouble in this country, and, that is, cheap work cannot be produced quickly, reliably and first class in quality. These are requisites that customers are insisting upon more and more, and they are willing to pay better prices if they secure them, so that the trend of prices here is upward instead of downward.

### REVIEW OF SPECIMENS RECEIVED.

The position of honor for the month in photo-engraving exhibits must be awarded the Franklin Engraving Company, of Chicago, for their reproduction in three colors of a piece of water-melon, entitled "A Toothsome Plateful." The motto of Chicago, "I Will," is exemplified in the development of three-color photography. While process houses in the older and more conservative cities are wondering if three-color plates will ever get beyond the theoretical stage, Chicago's photo-engravers say, "we will" make them; and they do.

"Done under the Imprint of the New York Engraving and Printing Company, 1895," is the tasteful inscription on the cover of twenty-five specimens of this company's work. The proprietors are men of long

experience in their business, and their results show it.

George H. Benedict & Co., of Chicago, are keeping abreast with the best process engravers in the country.

The writer did some work in the Sanders Brothers' place in St. Louis during the National Democratic Convention of 1888. He recalls

their modest quarters at that time, and congratulates them on their growth since then.

The Bartlett Company, of New York, seem to lead in half-tone cuts of machinery. All their work shows the skill of Mr. Bartholomew, their photo-engraving superintendent.

Zeese & Sons, photo-engravers, of Chicago, are a progressive house. They are endeavoring to improve their half-tone cuts with a woodengraving finish, and will succeed when the engravers have more experience at it.

A panoramic view of Denver, Colo., has been made by the Williamson-Haffner Engraving Company, of Denver, in a half-tone cut, 44 inches long, that would do credit to any eastern house.

All the productions of the Binner Engraving Company bear the imprint of an artist's critical eye.

The Electro-Light Engraving Company, of New York, have eighty-five employees. They do little bragging, but turn out a great quantity of excellent work.

The Electro-Tint Engraving Company, of Philadelphia, are keeping up their old-time standard in half-tone. Their plates show intelligent judgment in both the photographing and etching.

#### THE THREE MODERN ILLUSTRATIVE METHODS.

From the Coloritype Company, William Kurtz, President, we have received a handsome pamphlet with the same title as this paragraph. The methods mentioned are the coloritype process, the duograph, and the half-tone method. This last process Mr. Kurtz carried undoubtedly to the highest degree of perfection, and it is to be regretted that he neglected to push that branch of the business. The duograph is a half-tone in two printings of different shades of ink from the same or different blocks. It gives very beautiful results, and is identical with that of the Chemigraph Company, of St. Louis. The coloritype is the name given to the three-color process as used by this company, and of which their circular says: "Although pure photography in colors is yet unaccomplished, its far more useful and practical equivalent, photography in exact color values, is now an established fact in the perfected and successful processes of coloritype reproduction.

"As in the coloritype process neither the form nor coloring are dependent upon mechanical work, but, instead, are obtained photographically, there is a truth of reproduction impossible to other methods. In working coloritypes from paintings, either in oil or water color, all the individuality of the artist, both in drawing and coloring, is retained, regardless of the size of reproduction.

"From objects themselves, without the intervention of any sketch or drawing, coloritypes are readily produced in a resemblance so vivid as to be almost startling. A fine vase, a loaf of bread, a bronze statue, a richly colored rug, even a living plant or the ripened fruit—all alike are caught and fixed on the paper in lifelike form and color."

The proofs of coloritype work shown are in too many cases printed

from stone, and have the flat appearance of lithographic production. Mr. McFarland, the business manager, says that color printers, being lithographers, are obliged to do their printing in that way. It is the fact, however, that artistic color printing in large editions is best done from relief plates, and it will be to the Coloritype Company's advantage when they recognize it.

The French Government sent Messrs. Barbot and Debés to this country during the Chicago World's Fair to study our printing and engraving methods. Their report has just been issued, in which they state that, though we here use the same metals, zinc and copper, and the same acids, our plates are etched with remarkable rapidity. They add: "The lined glass for simili-graving has to be imported from France." This last will be news to our photo-engravers.

No patent for intaglio engraving can hold good, either for line or half-tone or photogravure, as all these applications were ante-dated by Fox Talbot's patents in the early days of photography. Any one can practice these processes.—*Process Work*.

Our disapproval of the practice of some process engravers to publish nude women in vulgar poses in their circulars seems to meet with a similar rebuke on many sides. One publisher tells us he will not trade with such engravers. It is even noticed on the other side of the Atlantic. *Process Work* says: "Americans have a weakness for the portrayal of the nude in art in the selection of half-tone cuts. Of some of the subjects, the remark applied to the statues in the Paris opera would fit very well—that they are very nice, but would be no worse if they displayed a little more linen."

The leading editorial in a recent number of the Engraver and Printer was on the same subject, in which a subscriber writes that he thought of quitting his subscription on account of "the lewd pictures that were allowed" in the photo-engravers' ads. Verb. sap.

### BLISTERS IN STRIPPING FILMS.

"CLEVELAND, O.

"Dear Sirs,—Knowing you to be thoroughly posted on matters pertaining to photo-engraving, may we take the liberty of asking you for information that perhaps you can readily give to our great advantage. We have been troubled for some months with blisters, etc., on our negatives on pouring on the stripping collodion. It is not always so. We may coat quite a number of negatives without trouble, but an occasional one is entirely ruined. Sometimes the trouble is in the shape of blisters; at others the film slightly cracks; sometimes there are a few of the stipple destroyed, moved, or rendered less intense.

"We are careful not to apply the collodion while the plate is in the least degree warm. The trouble never occurs on the application of the rubber, but, having thought it might be due to the rubber, we have used that obtained from various sources. Have also used different kinds of ether in the collodion, all to no avail. We will be free from the trouble for a time, but it will reappear again. A curious feature is that formerly it affected line negatives only, but of late it has attacked the half-tones too.

"We have never had this trouble till the past four or five months, but in that time it has been a source of considerable annoyance and expense.

"If you have ever encountered this difficulty, and are able to suggest the solution of it, if you will kindly do so, your favor will certainly be very greatly

appreciated."

This communication was answered immediately after receipt, but as it is a matter of general interest, the trouble being a common one, it is repeated here. The remedy is in drying the film of rubber thoroughly before covering it with the coating of plain collodion. The solvent for the rubber should be benzole instead of benzine, and this solvent must be entirely evaporated from the film, or it will form gas bubbles under the collodion. Low-grade benzine contains kerosene oil, and this prevents the collodion film from adhering to the underlying rubber one, and blisters are the result.

# THE SCIENCE OF TONE-RENDERING IN OPAQUE INK.

**4**3.-

(PRELIMINARY PAPER.)

(Continued from page 274.)

THE illusion of tone is produced by the ink being so disposed upon the paper that the eye cannot identify, at any one portion of the surface, either ink alone, or paper alone.

The practical method of obtaining this result is to distribute the ink in minute masses with intervals of plain paper between, the individual masses being so minute that the eye cannot readily identify them as being separate.

### (2) Methods of Producing a Series of Tones.

The surface with which the tones have to be represented is flat, and evenly illuminated. The sole power available of altering its appearance is by coating different proportions of it with opaque ink.

The word "opaque" is used here as a term of general application to all such inks as are practically, although, perhaps, not absolutely, opaque, and such as are used in cases where variations in the thickness of the ink coating are not essential to the representation of tone differences.

The apparent brightness of the tone in any given area of the print is dependent upon the proportion the inked surface bears to the uncovered paper—a dark tone indicating a larger proportion of inked surface, and a light one a larger proportion of uncovered paper.

As long as the condition that the individual masses of ink are so small that they cannot be identified as separate by the eye is fulfilled, it will make no difference to the apparent tone whether a given quantity of ink is made up of a large number of small masses or a few comparatively large ones, nor will it matter what the shape of the masses may be; but for practical purposes it will be a point of importance to decide whether the variations in tone can be most readily produced by masses of ink of various sizes or by different numbers of masses of ink

in a given area. Also whether the ink is to be disposed in lines, compact masses, or irregular grains.

# (3) Extent of Range of Tone in Print.

Neither the white paper nor the black ink in the print can be, strictly speaking, called "tones." Yet the lightest tone in a print may approach so nearly the white paper in brightness as to be indistinguishable from it, and the darkest tone will bear a similar relation to the black ink, so no appreciable error will arise in considering the white paper as the brightest tone and the black ink as the darkest.

For practical purposes, therefore, the range of tone in the print is to be found by measuring the proportion of the incident light reflected in the one case from the paper, and in the other case from the ink, and dividing the one by the other.

A subject having a greater range of tone than exists in the print cannot be exactly represented.

From a practical point of view it should be noticed that any number of dark tones may be massed together and represented by the full coating of ink at the option of the block-maker without any printing difficulty arising, but light tones cannot with equal readiness be represented by no ink at all, as any large surfaces intended to be represented by absolutely white paper will require in the block to be very deeply sunken or they will not remain clean in printing. This deep sinking will involve special etching or cutting away by mechanical means.

It will be a great advantage if even in the lightest tones continuity of the series of dots is maintained, as this will in a great measure obviate the necessity for handwork, and consequent risk of injuring the proper gradation. Very small points in the block, which will print as minute dots, are quite sufficient to prevent the inking roller dipping, and such dots can be present without perceptibly degrading the purity of the whites.

The greatest skill in block-making will be shown by obtaining the full range possible in a block without having to resort to special etching or toolwork to clear the high lights.

# SECTION III.—BLOCK-MAKING.

The blocks in most common use are those giving prints in which the tones are produced by regularly disposed masses of ink of differing size. Such blocks are made by the aid of a ruled screen. It is to this method only that we have at present devoted our attention.

We give an outline of a process in extensive use.

The copy from which the block is required to be made is usually a photograph or wash-drawing. It is illuminated either by daylight or the arc light, the aim in arranging the lighting being to secure a bright and even illumination. At the same time any appearance of granularity of the surface must be carefully avoided, as it will have a very injurious effect on the evenness of the tones. If the surface of the copy is shiny, care must be taken to avoid direct reflection from it into the lens.

The final block will have to be reversed in order to give a correct print; the negative must, therefore, be a copy of the reflection of the object and not of the object itself. As a reflector, either a sheet of glass silvered upon the surface or a right-angled prism can be used, fixed either in front or behind the lens.

The lens used must be of long focus compared with the size of the negative in order to avoid using rays of light falling very obliquely upon the surface of the plate.

Inside the camera and close in front of the sensitive plate a screen is fixed. This screen consists of two sheets of glass ruled with narrow black lines with clear intervals between, and arranged together so that one set of lines cross the other at right angles, the result being a series of minute transparent spaces separated from one another by opaque pigment.

Regularity in the size of these spaces being of the greatest importance, the ruling must be performed with extreme exactness, the slightest variation in width or position producing a falsity in the tones.

The number of these transparent spaces to the square inch varies, in ordinary circumstances, according to the nature of the work, from 7,225 (85 lines) to 40,000 (200 lines). For blocks used for ordinary printing with type the average number is about 15,625 to the square inch.

The tones of the negative taken through this screen instead of being continuous are broken up into dots of varying size, the light passing through each individual transparent space forming a separate dot. The opacity of these dots is greatest in the center, and shades away towards the margins. This shading off, for reasons which will be explained later, introduces certain difficulties into the process of block-making and is to be avoided as far as possible. The aim, therefore, is to obtain dots in which the opacity falls off abruptly in the margins.

The wet collodion process will give this characteristic more readily than gelatine dry plates, and is, therefore, generally selected. It has the further advantages of preserving great transparency in the spaces between the dots, and of allowing the various manipulations being completed in a short time.

The exposure given is regulated so as to secure the correct extension in size of the dots. As it will be in ordinary cases extremely long, special precautions are necessary in order to obtain negatives free from defects.

In development care is taken to stop the action before any fogging sets in. After fixing, a clearing solution is applied to the plate to clear the transparent parts of any slight deposit, and also to remove the weakest portion of the margins of the dots.

The reduction in the size of the dots thus brought about is allowed for in the adjustment of the screen and duration of exposure.

Intensification is necessary to increase the general opacity of the dots, and it also carries with it the advantage of rendering the falling off in opacity at the margins much more abrupt.

The negative now consists of a series of practically opaque dots with transparent interspaces. It is required to reproduce it in the form of a printing block in which the portion of the surface corresponding to every opaque dot in the negative is etched away, and in consequence does not receive any coating of ink from the roller when the block is inked for printing. The print is, therefore, the reverse of the negative.

The metals commonly employed for printing blocks are: copper, brass and zinc.

The surface of the metal plate, worked perfectly flat and smooth, is given a coating of a solution which, when dried, forms a sensitive film having the property of becoming insoluble when exposed to light action.

On exposure under the negative the parts under the opaque dots remain soluble, while the remainder of the surface is, by the action of light, rendered insoluble. The soluble portions are removed by washing, leaving the surface of the metal exposed. The etching solution acts upon the exposed parts of the surface and dissolves the metal away, leaving the parts covered by the insoluble film in relief.

The metal plate is mounted on a block of wood to bring it up to the usual type height, and is printed from in the ordinary typographic press.

### THE PRINCIPLES OF THE ACTION OF THE SCREEN.

The screen is required to do two things:

(1) To break up all the tones of the negative into separate dots.

(2) To produce dots whose size varies according to the degree of brightness of the various tones in the copy.

In considering the action of the screen, it must be noted in the first place that in the exposure of a plate in the ordinary way, without using a screen, rays of light reach any one point of the sensitive surface in every direction in which straight lines can be drawn through the stop aperture to that point. Also that the sole function of the screen is, by virtue of its opaque parts, to stop some of these rays.

The light coming through the stop aperture behaves in the same way as if it originated there, and the aperture may be considered as a source of light. If the ruled screen is in a suitable position between the source of light and the sensitive plate, its opaque lines will cast distinct shadows upon the sensitive surface.

This easting of a shadow is the only condition necessary to bring about the breaking up of the tones into dots.

As the source of light is very much larger than the object casting the shadow, the distance the screen can be from the plate is limited, the effect of too great a distance being a general degradation of illumination and not distinct shadows. As regards the mere production of separate dots, there is obviously no limit as to closeness, but in order that the dots may vary in size it is necessary that the ruled surface of the screen should be some little distance away from the surface of the plate, for if used touching it, the dots, although they might vary in

opacity, could not vary in size, being everywhere the exact dimensions of the screen openings.

The dots are required to be in some cases larger than the openings and in others smaller.

It will be convenient to consider first the case of a copy having an evenly bright surface.

As before stated, the stop aperture may be considered a source of light; its area may be taken as the measure of the maximum amount of light which can fall upon any one point of the sensitive surface.

If an opaque body is interposed in the way of direct lines from the various parts of the stop area to any point on the sensitive surface, the light falling on that point will be diminished; and, as it may be taken without appreciable error, that the light is evenly distributed over the stop area, the amount of diminution is proportional to the extent of the area which is obscured by the opaque body.

Now, in the case under consideration it is the opaque portions of the screen which form the obstructing body, and the intensity of the light falling upon the various portions of the plate is inversely proportional to the amount of obstruction caused by the opaque lines.

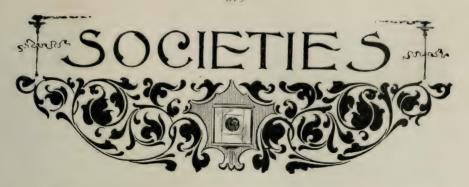
It will help the explanation if it is supposed that the eye is moved about in the plane occupied by the surface of the sensitive plate; then the rule as to the variation of the intensity of light action can be thus stated. The intensity of the light acting upon any individual point in the sensitive surface varies with the area of stop aperture which can be seen from that point through the transparent parts of the screen.

Considering any one screen opening, the eye will be in the most favorable position to see a maximum extent of the stop area when it is in the position where a direct line through the center of the stop area and the center of the screen opening cuts the sensitive surface. This is the position therefore receiving the maximum of light action. Practically it is the part of the sensitive surface immediately opposite the center of a screen opening.

As the eye is carried away from the position of maximum effect, the opaque parts of the screen will hide more and more of the stop opening and the intensity of illumination will fall off in proportion. The greatest part of the area of the stop will be hidden when the eye is in the position where a line through the center of the stop aperture and the center of the widest area of opaque substance in the screen cuts the surface. The widest area of opacity will be that situated in the midst of four screen openings, and the position of minimum light action may be taken as being immediately opposite the center of this.

On a plate being exposed there will be, therefore, a maximum of light action opposite the center of each transparent space, and a minimum of action opposite the center of each opaque area, and a constantly diminishing effect extending from the maximum position towards the minimum, the result being a series of dots having a maximum of opacity in the center and graduating off to the margins.

ALEXANDER A. K. TALLENT and ALFRED W. DOLLOND.



With the advent of the winter months comes an increased activity among the photographic societies. Many have already commenced their regular monthly meetings, and this month will probably see all under full swing. It is to be earnestly hoped that the coming session will be more profitable than the many that have passed. When it is remembered that there are thousands of amateur photographers banded together with the sole purpose of increasing their knowledge of and advancing photography, it is truly surprising that, with the exception of the Photographic Society of Philadelphia, not one society has recently done anything to really advance photography.

If secretaries of societies will send us condensed reports of proceedings, we

shall be glad to publish them.

THE second exhibition of Artistic Photography, organized by the Association Belge de Photographie, will be held at Brussels from January 15 to February 15, 1896. A jury of eight, selected from the artistic and photographic experts of Belgium, will examine the pictures and select those to be exhibited. The number of pictures for each exhibitor is limited to ten, and each picture must be separately mounted and framed. No awards are offered, but each exhibitor will receive a commemorative medal. Applications for space should be made before December 1st to the Secretary of the Association, 97 Avenue Brugmann, Uccle les Bruxelles, Belgium. ~o;se:co-

Alfred Stieglitz has been awarded one of the twelve medals given at the Royal Photographic Society's exhibition for his exquisite picture "Scurrying Home." This is a picture of two peasants hurrying over a bare stretch of land to a distant church. The photogravure which received the award was, we understand, made from a 4 x 5 negative considerably enlarged and cut away until the desired effect was given. -----

SILVER LAKE ASSEMBLY CAMERA CLUB.—Established 1895. Headquarters and place of annual meeting, Silver Lake Assembly, New York. Membership open to all amateurs. President, John W. Sanborn, Smethport, Pa.; Secretary and Treasurer, Uri Mulford, Tioga, Pa. ------

CHARLES WAGER HULL, whose death was recently announced, was one of the original members of the Society of Amateur Photographers of New York, and had long and honorably been connected with photography.

Buffalo Camera Club.—At the annual meeting in October at the club rooms in Palace Arcade the following officers were elected: President, William J. Haskell; Vice-President, John A. Stein; Secretary and Treasurer, John B. Zenner; Interchange Director, H. H. Boyce.

CAMERA CLUB OF MOUNT VERNON.—The first annual exhibition of this Club will be held at Trinity House on the evening of November 11th, and the afternoon and evening of November 12th. Four prizes will be awarded. All entries must be made before November 4th. For further particulars address Miss Mary E. Jennings, 512 S. First Avenue, Mount Vernon, N. Y.

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The eighth annual International Exhibition of Photographs of the Photographic Society of India will be held in Calcutta in February, 1896. Four gold, twelve silver and fifteen bronze medals will be awarded. All pictures, carriage paid, should be addressed to the Honorary Secretary, Photographic Society of India, 57 Park street, Calcutta, India, and must reach him not later than January 15, 1896. Intending exhibitors can obtain further information by addressing the BULLETIN.

We would call the particular attention of secretaries of photographic societies to the letter of Mr. W. A. Morse in our October issue. The interest in the meetings can be largely increased by an occasional demonstration. Of the many printing papers at the disposal of the amateur there are none more reliable than Aristo-Platino, and the demonstrators of the American Aristotype Company will readily respond to a call. If secretaries desiring to arrange for such demonstrations will communicate with us, we will take the necessary steps.

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BROOKLYN INSTITUTE—PHOTOGRAPHIC SECTION.—The season of 1895-96 of the Department of Photography of the Brooklyn Institute was opened on October 4th by an informal meeting at the rooms of the Department, 201 Montague street, Mr. Hopkins presiding, when the work for the coming season was planned and discussed. On Friday evening, October 11th, the second weekly meeting was called to order, and after a short business meeting, the former Secretary, Mr. Gould W. Hart, gave a very interesting talk and demonstration on the making of dry-plate lantern slides. The third weekly meeting was held on October 18th, when a very instructive and interesting lecture was given by President J. Frederick Hopkins, the subject being, "An Old German City Seen with a Camera," the old city of Nuremberg being the city described.

The season opens with a very successful outlook for the Department, and during the next four months a series of conferences on photographic subjects will be held. The work of the members who are interested in lantern-slide making promises to surpass the work of previous years, if that be possible, and a number of interesting "lantern-slide nights" are expected. The classes in retouching, which were so successful last season, will probably be continued, and, if it be found practicable, a class in lantern-slide coloring will be formed. The work of all the committees is now well under way, and it is expected by next month that the work for the coming season will have been outlined. Members and their friends are invited to attend our Friday evening weekly meetings at the rooms.

Those who have been unsuccessful in obtaining a good lantern-slide developer will find the following, which is used by Mr. Hart, to work as satisfactorily as any:

Sulphite of soda. 2 drams.

Carbonate of soda. 2 "

Phosphate of soda. 80 grains.

Hydroquinone 25 "

Water 4 ounces.

Use undiluted.

Secretaries of Photographic Societies will find the list of societies in "The International Annual" useful for reference. The hints on the method of conducting a camera club given by Mr. Geo. Gilson are timely and instructive.

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SHOWING THE CONVENTION HALL WHERE CONVENTION OF P. A. OF A. WILL BE HELD NEXT JULY

# ANTHONY'S

# Photographic Bulletin.

EDITORS:

Prof. CHARLES F. CHANDLER, Ph.D., LL.D. FREDERICK J. HARRISON.

Vol. XXVI.

DECEMBER, 1895.

No. 12.

## TO PROFESSIONALS.

T is comforting to hear on all sides that "business is picking up," and it is a fact that business generally is better. Still, we cannot refrain from pointing out a few things that are entirely neglected by the professional photographer, which, if given the attention they deserve, would surely result in an increase of business. A professional

photographer should also be a business man, and should conduct his affairs on business principles. Yet, perhaps, in no other profession are the opportunities presented so often neglected. In our November issue we made mention of Christmas mounts as a means of making business, and, following the line of thought therein presented, we would advise photographers to pay more attention to keeping in touch with their customers. It is customary, we believe, to fill an order and rely upon the prints delivered to bring in orders for duplicates. No effort is made to bring to the attention of the customer the fact that a resitting is not necessary for the production of duplicate prints. The photographer does not think



Australian Cockatoo, by H. CRISP.

of keeping in touch with the patron, and offering any inducement for his return. He places the negative on his shelf, and waits. The idea of employing a typewriter or a correspondence clerk does not enter his head, and, while we read of the immense number of negatives that Mr. —— has upon his shelves, the value of these is small, for they are

not put to any use, except at rare intervals when a customer returns unsolicited. Supposing a patron purchases a dozen pictures, how long does he keep them? They are almost immediately distributed, and he is often deluged with requests for portraits by his friends who were not around when the distribution was made. Now, supposing that one month after the purchase of the prints this customer receives a nicely worded letter to the effect that duplicates may be purchased at a reduced price, there is every probability that he will avail himself of the offer. Suppose, too, that, in the interval, the photographer has adopted a different printing material, and that a sample print is sent with the above request. The result will, in many cases, be an order. A different mount, a difference in the shape of the vignette, a colored print, or any change, will rivet the attention, and, if the original subject does not give you a call, there is strong probability that he will talk of your enterprise and exhibit your print and your letter. How many hours a day is your reception-room attendant without active work? And how long does it take to write and send out such a communication as that mentioned above.

This month, of all others, is the best for a trial of this method. Again, inform the customer that a crayon, bromide enlargement or a pastel would make a suitable present to his wife. Do not make this announcement on a cheap-looking circular, sent in an unsealed envelope, but send a letter; it will receive more attention.

The Professional Pointer offers a suggestion well worthy of notice. "Certain negatives are selected for a day's work of the correspondence clerk. Proofs of the negatives are made on Aristo-Platino paper, and toned, but not mounted. Letters are written to each subject stating that "as we are about to store away certain negatives, it occurred to us that, inasmuch as we are producing better work than we did at the time of your sitting, you might like to place an order for a dozen or more from your negative before it is stored away. We take pleasure in enclosing a proof on the new permanent material which we are now using, which, when finished, makes the finest and most artistic picture imaginable. Should you desire any of these pictures, kindly notify us within six days, in order to enable us to hold your plate."

Under any circumstances it is well to keep in touch with old customers, to keep them posted on what you are doing. Ask them to call in and see anything special that you may have produced, and make them feel that you are the one photographer who can best supply their needs. And when you make a sitting do not stint on plates. Make two or three extra negatives. In many cases orders will result.

Then, too, let the people know that you can make flash-light pictures, and these at night at their own homes. Lots of business can be done at children's parties and similar affairs by an enterprising photographer.

Finally, keep in touch with your customers and run your business on business principles. It is not good business to make only twelve prints from one negative. It is waste of opportunity, waste of material.

A Notable Wedding.—Richard A. Anthony, of New York City, and Miss Amelia Van Valkenburgh, of Boonton, N. J., were married in St. John's Episcopal Church, Boonton, on Tuesday, November 5th.

At 6 o'clock the two pages, maid of honor and bridesmaids entered the church from the vestry-room, and proceeded down the aisle to the inner doors of the church, where they met the bride as she entered, accompanied by her father. The procession, with the ushers, the bridesmaids and maid of honor in the lead, proceeded up the aisle, followed by the bride and her father and the pages. At the altar they met the bridegroom.

The bride's gown was white satin, with long and full train. It was trimmed with point lace that had been worn by the bride's mother. The veil was fastened at the head with a diamond crescent, the gift of the bridegroom. The bride carried an ivory-covered prayer-book, while her bouquet of lilies of the valley was carried by one of the pages.

The maid of honor was Miss Boyd, of New York City, who was dressed in green bengaline, trimmed with chiffon, and carried pink bride roses. The bridesmaids were dressed in pink silk crépon, trimmed with chiffon, and carried white chrysanthemums. They were Miss Edith Boyd, of New York; Miss Jenkins, of Trenton; Miss Thomas, of New York, and Miss Soleliac, of Harrisburg, Pa. The best man was Henry Montgomery, of Staten Island, and the ushers were C. V. B. Powers, Cornwall-on-the-Hudson; Edward Soleliac, Allentown, Pa.; Benjamin Prince and Samuel Austin, of New York. The pages were little Miss Avis Putnam and Master Edmund Whitman Putnam, of New York City.

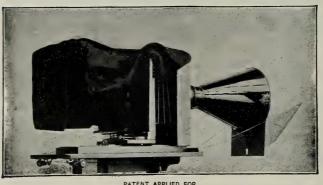
The ceremony was performed by Rev. Edward Krans, of St. Ann's Church, New York City, who is a cousin of the bride. Following the ceremony a wedding reception was held at the home of the bride's parents.

We have in several issues of the Bulletin alluded to the new illuminant, acetylene. By the courtesy of Mr. E. N. Dickerson we were able to see the practical application of this gas to ordinary illuminating purposes. The gas, in the liquefied form, was stored in an iron cylinder which was connected to a gas pipe, and the ordinary burners were used. The light given was simply superb, making the ordinary gas, burning at the same pressure, look ridiculous. The enormous advantages of this form of illumination are evident. Street mains are unnecessary, gas companies can no longer extort high prices for a miserable product, with a meter that does not measure, and a light of extraordinary power is thus placed at the disposal of any one in any locality. An acetylene torch was an interesting application of the gas. The price will, we believe, be considerably less than that of ordinary gas. We predict a revolution in house illumination.

All matter for insertion in the January issue of the BULLETIN, all advertisements and matter connected therewith, must reach us not later than December 18th.

### VIGNETTING IN THE CAMERA.

IN direct line with the comments we have been making recently, urging the professional photographer to be on the qui vive for novelties, and for anything that is likely to prove attractive to patrons. and for the amateur to adopt whatever methods he can to vary the gen-



PATENT APPLIED FOR.

eral monotony of his work and to get off the beaten track, we would call the attention of our readers to this method "Vignetting in the Camera," which well deserves their attention. The ordinary vignette,

which is made while printing, is produced by shading the sensitive paper from the action of the light and obtaining a gradual transition from the picture itself to white paper. This is old, and has entirely

ceased to be a novelty. The opposite effect, namely, obtaining what we might call a black vignette, has not received the attention it deserves, but we are glad to say it is now being adopted by most photographers who have any claim to be called progressive. While it is true that these vignettes may be imperfectly obtained during printing by taking the picture as it comes from the frame and shielding the picture itself and allowing the light to act upon the paper surrounding the image, these vignettes are not perfect and really offer no advantage. Again, it has been suggested that a vignetting mask inside the camera, between the lens and plate, should be used,



and in a recent issue of the Photogram, in an article on "Egyptian Vignettes," this method is described. It is, however, clumsy, not easy to handle, liable to make trouble when the bellows is pushed in

and out during focusing, and is incapable of ready adjustment. Again, it is difficult to see how a really efficient piece of apparatus could be devised which would admit of changing the shape and shade of the vignette. This is not a satisfactory method by any means.

The half-tone cut shows an arrangement that has been devised by Rösch, the well-known photographer of St. Louis, and which has received the name of the Rösch vignetter. A hood is attached to the lens, and, as shown in the cut, projects out, forming a shield, while attached to it is a sliding piece with serrated edge which may be put at any angle, any height, and,



in fact, in any position, and is adjusted by means of chains from the back of the camera. Thus, without any trouble, the operator, while examining the image on the ground-glass, can adjust the vignetter



until the effect that he is aiming for is obtained. The photographs which we have reproduced here in half-tone show some of the effects that may be obtained with this vignetter.

The professional photographer can, it is safe to say, save the cost of the vignetter in a week by the saving of time in the cutting of the vignette papers, etc. We recommend this particularly to our professional friends because:

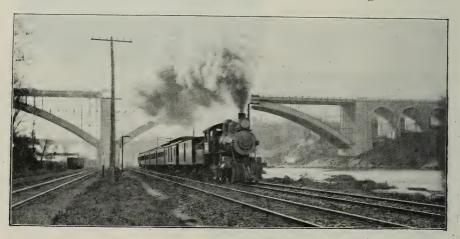
First.—The demand for plain printing has increased to such an extent that it becomes necessary to vignette most negatives in the camera.

Second.—The introduction

of dark backgrounds is another fact that makes this vignetting almost a necessity.

Third.—The old-style print, vignetted in the printing-room, has practically become a thing of the past with progressive photographers. The public are craving for the so-called "engraved picture," and white backgrounds do not give the desired results. Matt-surface papers have done much to create this desire and bring about such results. Hence the necessity of a very convenient vignetting device. In this connection we would say that the accompanying illustrations, showing the effects obtainable with the device, are made from prints on Aristo-Platino paper, and that the prints themselves leave nothing to be desired.

Fourth.—The approach of the holidays is another incentive to the use of the vignetter. The saving of time in the printing-room, the obtaining of a greater number of prints in a given time, and the fact that such vignetted prints are a novelty and a really good thing, all are arguments in favor of the adoption of such a device. The vignetter may be attached to any lens by means of a collar, or the vignetter itself



Negative by E. R. Rockwood.

THE CHICAGO LIMITED.

may be made independent of the hood and attached to the top of the camera stand.

The amateur photographer is not usually very successful in the cutting of vignettes, and rarely obtains the smooth gradation seen in professional work; but with the arrangement such as we have mentioned, the necessity for long experience in accomplishing these results disappears, and a truly remarkable diversity of results may be obtained with the greatest ease.

With much sorrow we record the death of Emil Wildbret, on Monday, November 25th. For the past twenty-eight years he has been a trusted and faithful employee of Messrs. E. & H. T. Anthony & Company, our publishers, and his death will be mourned by a large circle of friends.

He entered the employ of Messrs. Anthony & Company when he was about eighteen years of age, and, with the exception of a year and a half, was with them up to the time of his death.



Our English cousins have at last realized that collodio-chloride emulsion papers are the most suitable for the professional photographer's use. For some time past, orders for American Aristotype papers have been coming from the British isles, and, doubtless, the exquisite prints that have been used as frontispieces in this and other American publications for the past few years have done their share in weaning photographers over the water from albumen and gelatine prints. It is rather amusing, though, to read in an editorial in the British Journal of Photography, "We shall feel satisfied if we have given some help to the introduction of such a most valuable printing medium as collodio-chloride paper." It may interest English readers to know that, out of one hundred and seventeen exhibits at the Convention of the Photographers'Association of America, one hundred and ten were on collodio-chloride paper of one make only—Aristo-Platino.

Sir Robert T. Ball sets an example that might well be followed by astronomers here. His observatory at Cambridge, England, is open every evening to the general public, an assistant explaining the working of the large telescope and pointing out the various better-known heavenly bodies.

German and American celluloid may be distinguished by applying a hot iron. The German make becomes powdery, while the American softens.

The Young Republican, a live Boston publication, publishes a portrait and life of Mr. G. Waldon Smith, the well-known Boston photographer. He has been connected with the introduction of many reforms in Boston, is an active member of the Boston Press Club, of the Mercantile Library Association, of the American Legion of Honor, is a member of the City Council, and President of the Young Men's Republican Club.

As the majority of our readers are users of Aristo-Platino matt-surface collodion paper, they will be interested in learning that rich olive-black tones may be easily obtained by double toning, as described in our April issue. Do not tone too far in the gold bath, and then carry the toning well down in the platinum bath. Take care to wash the prints between the platinum toning and the hypo bath, or the acid carried over into the hypo may make trouble.

The whole fraternity seems to be going Aristo-cratic.

Our publishers have fitted up in one of their show rooms an electric-light gallery, in which photographers can test for themselves the Anthony electric-light system. Every facility is furnished for the making of negatives, and those who doubt the capabilities of artificial lighting are invited to come in and try for themselves.

Harold Baker, a prominent English photographer, says: "As far as permanence is concerned, I find that collodio-chloride prints exposed to the full blaze of the mid-day sun, in show-cases anything but damp proof, remain apparently unchanged at the end of three or four months; and such prints taken from the cases are put aside to be used again, instead of being burnt at once, as formerly."

"Genre photography requires patience. The amateur should never weary of his task, but place his models in different positions, and try the effect of various accessories until he is satisfied that the lighting, poses, and all the numerous details that go to make up a good genre photograph are as perfect as he can possibly make them."—Dr. Hugo Erichsen.

"Home scenes are always the most attractive at an exhibition, and yet this is the most neglected branch of our art work. Let me plead with those who have not been attracted to this class of work to give it attention, and the result will well repay the effort. Try home photography, and it will prove to be far more attractive than that of the summer outing."—R. E. M. BAIN.

"IF you use figures at all in landscape work, remember the wonderful power of the human figure for attracting attention (no matter how small the figure), and that it should form part of the scene itself—never seeming to pose."—H. O. Warner.

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Mr. James Shepard, of New Britain, Conn., writes in "The International Annual" on Photographic Books, and his remarks are well worthy of close attention. Mr. Shepard favored us with a call a few days ago, and showed us one of his albums. The covers were exquisite blue prints, and the inside matter was made up of blue prints, carefully matted, the reading matter being done with a typewriter.

One-fourth of a prominent English photographic journal is made up of articles copied from American journals, and there is not an original article between the covers. On this side of the water there are many offenders in this particular. There is, of course, no remedy, but it is not good form to take by wholesale the articles from other

journals, which articles have, in the majority of cases, been paid for by the said journals. We would not, in this connection, have it appear that we hold it to be the incorrect thing to reproduce occasionally articles of interest. This we often do ourselves, but we give as well as receive. We would simply protest against the wholesale appropriation of matter from other journals.



The accompanying cut shows more clearly than that published in our November issue the Christmas mount therein alluded to. The prints are first mounted on a thin mount, and this, in turn, is mounted with glue on the back leaf of the Christmas mount. The result is certainly very effective.

If the bottom of your graduate breaks off, procure a collar to a lamp, insert the broken end of the graduate into the small opening of the collar, and fill in with plaster of paris.

"A LITTLE novelty suggested to the printer, perhaps by the merest accident, may yield his employer many dollars if properly used. A little advertisement calling attention to a certain point of excellence in your work may prove of great value and start trade in your direction that you might not reach by other means."—E. E. Weatherby.



"Photographers working under the skylight day by day the year round often lose sight of the fact that light—its superabundance, concentration, diffusion, etc., strongly affects certain temperaments. Some people, forced to remain in a strongly concentrated light for a few minutes, become irritable and restless; others may be raised from depression to enthusiasm by moving them from comparative shadow into bright light. These indications should be watched for. Make the sitter comfortable as far as the light is concerned, if you desire a successful portrait."—John A. Tennant.



THE Scovill & Adams Company of New York will remove to Nos. 60 and 62 East 11th street on or before January 1, 1896. We wish our friends continued success.

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In a paper read before the Photographic Society of Philadelphia, Mr. F. E. Ives, speaking of color screens, remarked:

"The made-up screens were colored films of gelatine and collodion on selected plate glass, sealed by cementing to another plate glass, a method which I published ten years ago, but which has recently been credited to a writer who merely republished it without acknowledgment."

We do not know the identity of the individual referred to, but we must acquit him of any purloining of the work of Mr. Ives, for in the English patent of Ducos Du Hauron, dated July 22, 1876 (twenty years ago), the inventor describes a method of making colored screens, using colored varnish in alternate layers with gelatine and collodion in the shape of a pellicle. He says: "I procure two glasses, and, if possible, two glasses with faces rigorously parallel. I spread the colored varnish on one of the faces of one of them, or on one of the faces of each of them, as one or two layers may be necessary; then I shape the glasses into discs; and, lastly, I cement them together with Canada balsam, imprisoning in this cement the layer or layers of colored varnish. In this way the streaks, or undulations, are overcome; the whole is like a disc of crystal, perfectly homogeneous."

In Niewenglowski's excellent book, "Les Couleurs et la Photographie," this method of Du Hauron's is fully described, formulas for the colored varnishes are given, and it is stated that the experiments of the inventor led him to use orange, green and violet screens, instead of red, yellow and blue. In 1876, Albert, of Munich, was able to make excellent phototypes by this method.

# SOME POINTS ON GROUPS.

Toften happens that a group which has been composed with the greatest possible care results in a picture stiff and unnatural to a distressing degree. Mishaps of this sort seem to occur more frequently in this line of work than in others. No one who is in the habit of seeing any groups can fail to have observed the prevalence of work which is excellent up to a certain point, and just falls short of being complete and satisfactory. Each separate figure may be quite up to the mark, the grouping may show no lack of care and painstaking, and yet the total effect may turn out hollow and unreal. There seems to be some perversity in this sort of thing, by which all the skill and thought one can bring to the task is liable to be defeated in some unaccountable way, without leaving one even the melancholy satisfaction of having learned a lesson.



Negative by E. L. Mudge. ART BUILDING, ATLANTA EXPOSITION

No small share of these failures may be attributed to the neglect of a few precepts for which the photographer must go to school to the artist. These may seem small in themselves, and so no doubt they are, but they are intimately related to the underlying principles of grouping, and their right or wrong treatment determines that slight deviation, which, in the end, makes all the difference between a finished and satisfactory piece of work and a failure.

To begin with, the whole field of group-work falls naturally into two divisions, (1) that which is essentially artistic, or may be made so, and (2) that which is not susceptible of artistic treatment, properly so-called, at all. It may seem a paradox to say that there is any kind

of pictorial representation with which art, in the strict sense, has nothing to do, yet such is the fact, as a little reflection will make clear.

Suppose, for the sake of illustration, that an artist were set to execute a painting containing, say, fifty figures, with the requirement that he should so compose them that each should be a portrait and none be given excessive prominence over the others. Would he not find himself handicapped beyond endurance? Yet, oftentimes, this is precisely the problem the photographer must deal with. He must include so many figures, and he must do something like equal justice to all of them. The artist in handling such a composition would have to make use of the full range of foreground and background, whereas in photographing such a subject we are restricted to foreground alone, or, at most, to foreground and a very shallow middle-distance. The consequence is that instead of full liberty of composition, we are reduced to a straight line, or a combination of horizontal and vertical. And it is obviously impossible to imagine a group so disposed possessing either ease or beauty.

It may safely be laid down as a rule, that any group comprising more than ten or twelve figures (my own opinion is that six or eight would practically be nearer the truth) is, by the conditions of its handling, entirely outside the domain of art; and any attempt to treat it as though it were within that range must end in disappointment. Now, then, the right line to adopt with such work is this: Don't try for too much. You can get a decent, honest picture of your crowd, you can give each one something like a portrait, and that is all you can do. But what you never can do is to make a beautiful picture, and if you are wise, you will not try; let it be a sound, sensible bit of work, and there's an end to it.

But handling the other order of group-work is quite another matter. Here we are, or may be, within the domain of genuine art. But here, also, we must be on our guard against going in for too much. In the great majority of such pictures high artistic considerations have little place. They are more essentially artistic than groups of the first order, because, in addition to making a sound and honest bit of work, we can make it pleasing as well—the composition may be easy and natural, perhaps in a measure beautiful. All this we can have without going beyond the every-day skill of any competent photographer, and for the most part it will be better for us not to let it be seen that we have attempted to go much beyond it.

But in work of a higher nature than the every-day portrait-group we must have an eye to more purely artistic methods. And upon this head I should like to make a few suggestions which may prove useful to those who are minded to attempt something ambitious. We may presuppose that all ordinary conditions have been fulfilled, and that we need only attend to higher considerations.

In the first place, the *sine qua non* of all excellent work lies, of course, in the grand principle of artistic subordination. Now, if you will consider any masterpiece of painting—no matter of what time or of what school—you will find that the finest distinctions are due to the fact

that the effect of every object in the composition is modified in greater or less measure by every other object in it. It is not merely that the eye dwells more upon one figure than another, but the way in which each is seen is more or less affected by the presence of the rest. Everything is in its degree conditioned, so to speak, by its surroundings; sometimes obviously, sometimes more subtly; but the effect is always there.

It is, of course, far more difficult for the photographer to attain such effects than for the artist. So far as the modification due to the element of focus is concerned, our conditions are radically different. Distinctness and definition in the case of the eye is chiefly determined by the mental attitude. The only physical condition which comes into play here is that of angle, which with a good lens has but little effect in photography-an effect which opticians have so long been trying to reduce to its minimum. And distance, which is the most powerful disturbing or modifying agency with the lens, has scarce any effect at all upon sharpness of vision. So we are practically thrown back upon lighting as our chief means of producing the more delicate and subtle grades of subordination. Something, indeed, can be done by due foresight in the original grouping, if we remember that the eye, in dwelling more on the cardinal figures of the composition, will itself more or less modify the effect of the others; but this does not go far enough to be much relied upon. Lighting is the main point.

Strict rules can no more be laid down here than they can for the like purpose in painting. Every photographer must, like every artist, work out such things more or less for himself. The principle to be kept in sight is this, that the eye, when regarding several objects, never sees them all as it would see each separately. The feeling with which we perceive them is the resultant of the group as a whole. And it is easy to see that the methods of managing such effects must be extremely variable. Still it is safe to say that we shall always find

that the question hinges upon the lighting.

It may, of course, be said that such precepts as these are too difficult to be of practical use. It is not so. They aim high, to be sure; but we must remember that in matters of true art it is only by aiming very high indeed that we shall ever attain even passable results.

C. Rotherham.

WE have received a circular under date of November 25, 1895, from the American Camera Company of Boston, which reads as follows:

"As there evidently exists some misunderstanding as to who were the actual makers of the cameras known as the 'Bull's-Eye,' we deem it but just to ourselves, makers of the cameras known as the 'Bull's-Eye,' we deem it but just to ourselves, and the trade as well, to make known that the cameras sold by the Boston Camera Manufacturing Company, prior to the advertised sale of that company to the Eastman Kodak Company, were designed and manufactured by either the Blair Camera Company or ourselves (The Boston Camera Manufacturing Company being a selling company only). We were no party to the sale or transfer, and are at present the sole and exclusive licensees under the Houston Patents covering cameras carrying the film in front of the focal plane of the lens in light-tight compartments, which invention dates prior to the 12th day of March, 1886.

"We have now ceased to supply the Eastman Kodak Company (except at trade terms), having given them notice accordingly, and shall in future, in addition to our business of manufacturing for The European Blair Camera Company, Limited, supply the trade with such cameras, selling them under the name of the Bird's-Eye Cameras."

This is rather interesting reading, in view of the notice received from the Eastman Kodak Company, dated August 23, 1895, in which that company advised the trade that it would manufacture the Bull's-Eye Camera in future.

## AMATEUR PHOTOGRAPHY.-OUT-DOOR WORK.

THIS innocent little lamb, firmly secured by a stout rope, is—I have every reason to believe—almost the sole representative of the once numerous family of "Mary's faithful followers" between the two commercial centers of New York and Boston. It seems strange that



amateurs residing in country places between these two centers should have to visit the city parks if they desire to make studies of sheep at pasture. Central Park, New York; Prospect Park, Brooklyn; and Franklin Park, Boston, all afford excellent opportunities for such studies, as the sheep, being accustomed to the proximity of pedestrians, are not disturbed by the nearer approach of the camerist.

There is no doubt that the autumn season is by far the best time of the year for out-door work. The settled weather of October—with its succession of fair weather and occasional fair weather clouds—especially offers splendid opportunities for landscapes, the earlier fall of



A Country Lane.

some of the leaves having thinned out the foliage slightly, thus reducing the dense shadows under the trees, permitting clearer detail and a better definition of the actual formation of them, without showing bare boughs. The view of a country lane here given, taken late in Oc-

tober, already presents indications of a thinning out in the foliage of the apple trees on the right, followed a day or two later by a complete shedding of them all, and the picturesque old willow tree -with its weird boughs overhanging the lane on the left-also succumbed to a chilly north wind and lost all its foliage within another week. This lane has been a repeated source of enjoyment to me for the variety of views it affords. Such refreshing glimpses of genuine country scenery are rapidly becoming very scarce even in New England (this being an age of roadways and side. walks), and after a return



Path Through Lynn Woods.

from the country to city life, one cannot help gazing upon such scenes with longing and with pleasant anticipations of another summer's outing.



Cottage by the Pond.

The path through Lynn Woods depicts one of the many miles of similar woodland footpaths winding in various directions through the

dense growth of this beautiful forest. A casual visitor to these woods would be apt to wonder when and how these paths had been constructed, and would perhaps assume they were the work of the aboriginal Indians; but on a late visit this fall I was astonished to find all these footpaths of the dry season are really the beds of miniature cascades, the natural waterways through the woods from the higher levels to the ponds. Lynn Woods comprises the natural water-shed for the ponds they surround. The City of Lynn, having purchased all that portion of the land which slopes towards the ponds from the summit of each of the hills (about 3 miles in length and 2 miles in breadth) for its water supply, has constructed many charming carriage driveways through them, and they are now open as a public park, the footpaths referred to leading from the driveways and being a natural feature of the forests.

The small illustration of a cottage by the pond is really of modern construction, and, while it might present a fairly good subject for the artist's brush, is usually passed by as unworthy of a plate by amateurs



A Favorite Artist's Study.

in this vicinity. The pond is situated among the rocks on the brow of a hill near the coast line at Clifton, Mass., the cottages in the distance

being summer homes, facing the ocean.

On the other hand, the illustration of a favorite artist's study is a view of a small brook on the Devereux Farm, near Marblehead Neck, which has been the object of the pencil and brush of innumerable artists for almost, if not more, than a century. In the open season as many as four or five persons may be found at the same hour, seated at various points of view under the shade of the trees, absorbed in their work with sketching block or brush and easel, creating an almost irresistible desire for a "snap shot" in the heart of the enthusiastic amateur; but such an overwhelming air of quiet prevails, one is almost compelled to refrain, fearing to disturb the equanimity, even if the innate sense of modesty possessed by all camerists did not counsel the resistance of temptation where the unconscious portraiture of strangers is threatened by the exposure of a plate on the object desired.

The rock-bound coast is a characteristic view of the entire coast line of New England, broken here and there occasionally by sandy beaches or river mouths. This was taken during the high tides of the full October moon, and gives some indication of the bubbling and boiling of the surf among the rocks, and the rising and spurting of the spray over



A Rock-Bound Coast.

exposed projections, caused by a strong northeast gale. Those who reside inland, especially in the south and far west, and visit this coast in the summer, never seem to tire of the fresh sea breezes and bright blue vista of ocean and sky to be obtained on these rocks, and the litter of baskets and bottles stowed away among the crevices of them



gives abundant evidence that many pleasant hours have been enjoyed by picnic parties and those who wield a "line and bait" during the warm weather; while, on the sandy beaches below, the rising tide and rolling surf gambol and play, and wash away all trace of humanity with persistence every day, leaving all things as they were, even before the age of man.

Walter Sprange.

## MOSS' METHOD OF PREPARING PLAIN SALTED SILVER PAPER.

WE have for some time past felt the need of a good silver-printing process suitable for intermittent work, when silver printing may only be required at intervals of weeks or months. Albumenized paper, if kept in stock, is likely to be found spotted, when wanted, from the extreme damp of the rainy season; and, on the other hand, if the weather is at all dry, the prints curl up and are difficult to keep in good order unmounted. The varieties of gelatino-chloride paper (P.O. P.) are very difficult to work in this steamy climate, the paper does not keep in good order, is expensive and not always obtainable when required.

We have latterly been using plain salted paper containing a good quantity of gelatine in the salting solution, but even with this it is very difficult to obtain bright prints except from very strong negatives, and the image was always more or less sunk and flat. Increasing the gellatine and adding a little chrome alum to harden it gave much better results, but it was difficult to prepare the paper with a good, even

coating without a proper machine for the purpose.

I was very glad, therefore, to see in the *British Fournal of Photography* for August 9th a paper, read by Mr. G. H. Moss before the South London Photographic Society, on "The Preparation of Plain Salted Silver Paper," and more so, on trying his formula, to find that it answered perfectly and practically solved the problem, so far as our work is concerned, and proved itself to be an effective, simple and inexpensive silver printing process with many special advantages of its own. It is more suited for thick paper than for thin, and the prints show a rich tone with plenty of brilliancy and detail in the shadows.

The main peculiarity of Mr. Moss' process is, that no colloid material, such as gelatine, albumen or starch, enters into the preparation of the sensitive paper beyond that already contained in the sizing, the advantage of this being that the unstable compounds, which gelatine and albumen form with silver salts, are absent or only present in very small proportion.

The difficulty was to obtain vigor and keep the image on the surface without the colloid, and after many experiments he adopted the follow-

ing formula for the salting solution:

Sodium chloride in crystals, not table salt	150 grains.
Ammonium chloride	100 🤃
Potassium bichromate	4 ''
Water to	20 ounces.

The bichromate gives vigor to the image, and may be increased for very thin negatives and lessened for hard and dense ones.

Whatman's drawing paper, or Rives' paper, is soaked in this solution for three to five minutes, and hung up to dry. If not required at once the salted paper can be kept, and is said to improve by keeping, no doubt by the action of the bichromate on the sizing of the paper.

The salted paper is sensitized by floating for about two minutes on the following bath:

Silver nitrate	400 grains.
Citric acid	150 "
Water	to ounces.

After sensitizing, the surface will be a light primrose, and care must be taken to avoid air-bubbles.

The paper when dry is very sensitive, and should be printed rather deeper than desired. The toning can be done as for P. O. P., with a bath of about half the strength. We have found the borax bath in ordinary use answer well. The prints must be well washed after toning and then fixed in hypo solution, I to 10 of water, for about ten minutes for thin papers, or up to twenty minutes for rough and heavy papers. After fixing, the prints should be well washed for two hours in constant changes of water.

The paper keeps well after sensitizing, and this is a further great advantage. The absence of colloid material or of any sulphur compounds, as in albumenized prints, tends largely to the permanence of the prints. With reasonable care in fixing and washing and by using fairly pure papers for salting, the prints may be expected to resist outside influences for a considerable period, not so long, perhaps, as platinum or carbon prints, but certainly much longer than silver prints prepared with albumen or gelatine.

The process seems really a useful one, well worth attention, especially of residents in warm climates.

Col. J. Waterhouse.



Is Mars Inhabited?—In an instructive lecture before the Brooklyn Institute, Mr. Percival Lowell, of Boston, discussed the probability of the occupancy of the planet Mars by some form of intelligence, and summarized the present status of our knowledge on the subject as follows: There is an atmosphere on Mars, and this has been measured. The seas have been found to be areas of vegetation; the mountains are probably clouds; the canals are canals for irrigation purposes and are indicated by the vegetation along their banks, and the theory of a local intelligence best explains the various phenomena. In the work done recently at Flagstaff, Arizona, the discoveries made may be attributed to the realization of the importance of the question of atmosphere and to the systematic character of the work done. It is not to be considered necessary that the local intelligence of Mars must be embodied in anything like man. There is nothing to limit mind, and on the general physical character of the body inhabited will depend the character of the body inhabiting.

In considering the question of the possibility of life on Mars, two questions will present themselves. Is there air, and is there water, on the planet? There are no organisms of which we can conceive that have life but that atmosphere is essential. The mere fact of change on the planet Mars is proof positive that an atmosphere is present. The atmosphere has been measured, the result being obtained in endeavors to fix the amount of polar flattening. The presence of water is shown by the appearance and disappearance of the polar cap, and by the appearance of green patches in summer which disappear in winter, the patches being vegetation. There is every evidence of water, and evidence that there is a scarcity of this necessary article. The general arrangement of the areas of vegetation indicates that some local intelligence has devised and constructed a system of irrigation by which the planet is supplied with water in the most advantageous manner.

#### PHOTO-MICROGRAPHY.

(Continued from page 366.)

OPAQUE objects illuminated by reflected light require a much longer exposure than transparent subjects with transmitted light, and the difficulties in focusing increase rapidly with the magnifying power. As a guide to exposure I extract from Davis' "Practical Microscopy" the following table relating to Mawson and Swan's "15 times" plates:

	Subject.	Exposures.		
Овјестіче.		With Microscope Lamp.	With a Triplexi- con or Sciopti- con Lamp.	
2 '' I '' ½ ½ ¼ ¼ ¼ ¼ ¼ ¼ ¼ ¼ ¼ ¼ ¼ ¼ ¼ ¼ ¼ ¼ ¼	Wing of blow-fly Proboscis of blow-fly  "" Glass crystal Section of deal Podura scale Pleurosigma attenuatum.	70 '' 60 '' 7 minutes.	3 seconds.  10 '' 20 '' 30 '' 2 minutes. 2½ '' 3 ''	

In recent years instantaneous work has been taken up with a view to photographing moving organisms, and exposures from  $\frac{1}{20}$  to  $\frac{1}{200}$  of a second are reported to have been satisfactorily given with immersion lenses. Formerly infusoria, etc., were rendered stationary by killing them with an electric shock. A flash light recommended for instantaneous work is produced by the ignition of the following mixture, which gives a flash lasting from  $\frac{1}{10}$  to  $\frac{1}{10}$  of a second:

Magnesium	30 1	parts (by	weight) in	powder.
Chlorate of potash	60	"	"	"
Sulphide of antimony			6.6	"

The combustion of this powder is effected in a metallic tube closed at one end, and provided at the other with a glass plate and diaphragm, the aperture of which corresponds accurately with the diameter of the illuminating lens. Within the tube, and on a level with its central point, is a metal plate upon which the powder with a piece of touch paper is placed. The latter is ignited through a slit in the tube closable by a shutter. The tube is further provided with a very long chimney.

- 17. With long exposures it is very essential that freedom from vibration should be secured, and this is a matter of considerable difficulty. Dr. Woodward used to isolate his apparatus from the floor of the room by placing it on solid concrete pillars built up independently from the ground, but even this was not always satisfactory. However, long exposures can be made, and photographs of phosphorescent bacilli have been taken by their own emitted light with an exposure of thirty-six hours and more.
- 18. As regards development, the same rules as apply to ordinary photography hold with photo-micrography, but in fine work it is not advisable to push development too far, lest the more delicate details should be lost. There is no object in giving recipes for developers, as it will be best to adopt the formula which the operator is in the habit of using for ordinary work.
- 19. Having briefly touched on the most important points connected with photomicrography, I will conclude this paper by pointing out that this branch of our hobby possesses the great advantage that it can be practiced in the evenings, when it will be found an excellent alternative to the long arm-chair, and that, being independent in a great measure of conditions of weather, it can be indulged in when other photographic work would be impossible.—By Captain A. D. G. Shelley, R. E.



#### EMBOSSING DIES BY PHOTOGRAPHY.

THE writer devised in October, 1881, the following method of etching brass embossing dies which is now for the first time published. The trouble in photo-engraving brass dies for embossing book covers and other purposes is that the mordant used is so strong, and the depth required so great, that there is difficulty in getting a coating on the relief portions of the die that will protect them absolutely from the attacks of the acid mordant.

Further, the etching is an intaglio one instead of relief. That is, the black lines of the design are sunk in the brass plate, instead of being left in relief as in ordinary photo-engraving. Therefore the process described here can be applied to etching on glass, steel or any other surface wherein an intaglio result is required.

We will suppose that the designer has made his drawing as usual in pen and ink for reduction. An ordinary photo-engraver's negative is made of this drawing in reverse. The brass is first cleaned with a strong solution of potash, and then surface-finished with willow charcoal as in preparing zinc. After washing well under the tap, flow the brass with the following solution:

Well-beaten egg albumen	I ounce.
Powdered bichromate of ammonium	25 grains.
Aqua ammonia.	5 drops
Water	8 ounces

This solution should be poured on one corner and be allowed to flow off the diagonally opposite corner, and this operation repeated until the solution has drained from each of the four corners. The plate is then dried in a darkroom with a gentle heat, while in an almost vertical position.

The brass plate is now sensitive to light and should be exposed under the negative for one minute in sunlight or three or five minutes in the shade. After which it is taken to the darkroom, heated slightly, just to remove the chill, and inked evenly and lightly with a glue or leather roller and any kind of printing ink. This last is said intentionally, for the ink is not to become part of the acid-resisting coating as in other processes.

After the brass plate is inked, it is laid for a minute in a tray of clean cold water, and the inked surface rubbed over with a tuft of absorbent cotton. It will be found that the ink readily leaves all por-

tions of the brass except where the light has acted through the negative. When the plate has been lightly rubbed over its entire surface with the cotton, the design should show as a positive in black lines of ink with the bared brass as a background. The plate is now dried.

It might be said here that in the finished die, the design, now in black ink, must be sunk in the plate, and the problem before us is how to cover the uncovered brass with a coating impervious to acid, and remove the ink designed so that the metal underneath it may be attacked by the acid.

This is how it is accomplished: A saturated solution of dragon's blood powder is first made and filtered through cotton. This is flowed on the brass plate containing the inked design, and thoroughly dried. Then it is flowed, while in a horizontal position, with spirits of turpentine. This penetrates the dragon's blood coating, so that with a tuft of



Negative by E. L. Mudge.

ATLANTA EXPOSITION, MACHINERY HALL AT NIGHT.

cotton the ink design can be washed away, leaving a negative image on the brass, which is now ready for etching with nitric or chromic acid, chloride of iron or the other mordants in use. When the "biting" has proceeded to a sufficient depth, the plate can be rolled up with a strong etching ink, and dusted with resin as usual.

All etchers will appreciate the value of this process, which enables them to make a relief, or positive, plate from a positive on paper or glass, and a negative, or sunken, design from a negative.

## LITHOGRAPHY AND THE THREE-COLOR PROCESS.

THERE is a carefully thought-out article in our esteemed contemporary, *Paper and Press*, by Harold M. Duncan, under this prophetic title: "A Glance into the Future of Lithography, Summarizing the

Signs of the Times and their Meaning." Mr. Duncan points out the various causes that have brought the lithographic business to its present condition, in which the capital invested in it—estimated at between \$18,000,000 or \$20,000,000—eannot earn even a fair rate of interest.

Among the fundamental troubles into which lithography has fallen he mentions: "The deterioration of art work, loss of originality in conception, a lowering of grade in ordinary practice, and consequent failure to understand that the artist's room is not a mechanical department. This aggrandizement of the commercial branch of the lithographic trade is a constant menace to good, enduring work. Subjects, properly artistic, become transformed in the employer's eyes into articles to be manufactured, and the entire art quality is buried beneath the enforced



Negative by E. L. MUDGE. ATLANTA EXPOSITION, THE MIDWAY.

instructions to the artist to make haste. The mistake is already irremediably committed when lithography is looked upon as a mechanical or an automatic process. The artist's room becomes a mere workshop—which is about what the greater number of artists' rooms now are—in which quantity is more highly valued than it should be, and in which, by slow degrees, the artist's originality and power are transmuted into mechanical qualities. The intelligent artists deplore this tendency. One of these artists not long since remarked that this mechanical handling of subjects is augmented 'by passing every sketch through the stipple or crayon-grinding process, by cutting the sketch into fragments and scattering it all over the artist's room.'"

In brief, then, one of the reasons for the decadence of lithography

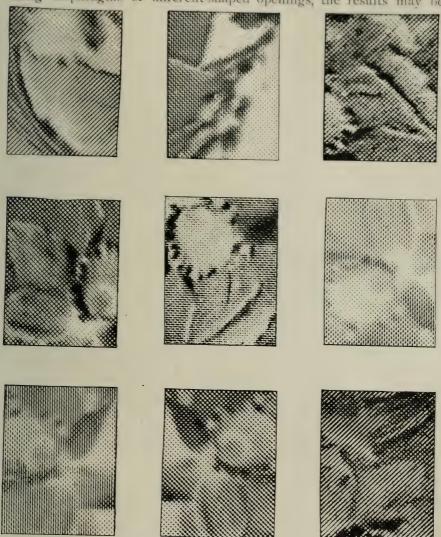
is that it is too often treated, not as an art, but as a manufacture. The artist's original sketch is turned over to a number of automatons, who copy it on the various stones, and the result is mechanical with all the artistic quality lost. Consequently first-class artists object to designing for lithographers.

Herein lies the hope for the three-color photographic process. will give, in the first place, a reproduction of the artist's work, and not a translation; then it will do quickly what now requires weeks; and, further, its blocks can be printed on a typographic press, giving a crisper result and printing at greater speed that can possibly be attained on a lithographic press. Without mentioning any of these points of superiority which the three-color photographic process possesses, Mr. Duncan admits that: "For a certain class of work it is probable that the future of lithography, especially in fac-similes, will be influenced in no small degree by both simple and compound photo-chromatic processes. The important part which photography can take in chromolithographic practice is not yet even in its infancy, let alone its matured commercial stage. Will the photographic processes take away from lithography that which makes it lithographic? Will process supersede the manual departments of the labor? Will the changes wrought in color by means of three-, four- or five-color photography dispense with chromo-lithographs in eight, ten or twelve colors? These are serious matters. It is a grave question whether the public will pay for the latter when they can get the former. Certainly they will not do so unless the quality of the lithograph is raised so much higher than the process print as to make the difference in cost warrantable. Progress all along the lines qualifies one to prophesy the ultimate perfection of the photo-chromatic methods with a limited number of colors. So far as the effect of half-tone upon lithography goes, it has about done its worst, and little may be said about it excepting in connection with other influences." These admissions are certainly full of hope to the process-worker, coming as they do from one not at all friendly to the coming revolution which he foresees.

#### VARYING HALF-TONE TEXTURES.

Since the fact has become generally known that the character of the lines or dots in half-tone engraving can be varied by the shape of the diaphragm aperture, several experimenters have been working in that direction. Graf Vittorio Turati, of Mailand, gives some results in *Photographische Mittheilungen*, which we reproduce herewith. All the effects are produced with the same cross-line screen, used in the customary diagonal way, the only difference being that the diaphragms vary in the shape of their apertures, and are changed and given different lengths of exposure on the same negative. The following is a translation in brief of what M. Turati gives as a description of his method of working: "Expose the plate equally first to white paper with a very small diaphragm. Then expose the plate to the original with a larger diaphragm, and now close the dots in the high lights with a short ex-

posure, using a diaphragm containing a diagonal cross-shaped aperture. In conclusion, it may be mentioned that, by turning the screen and using diaphragms of different-shaped openings, the results may be



Enlargements from Turati's Half-Tone Negatives.

altered in many ways, and that with these methods an extraordinary fruitful field for work is opened up to the practical man."

## NOVEL DIAPHRAGM APERTURES.

Last June there was published in this department of the Bulletin four diagrams of diaphragm apertures that have been copied extensively. These served to stimulate experiments that led away from the monotonous cross-line screen effects. Herewith are shown the results of later experiments in the same direction. These diaphragms are cut out of ferrotype plate and finished with various-shaped files. Or they

can be cut out of "press" board with a sharp knife. If these shapes are used for short exposures, with a diaphragm with a small circular opening for the long exposure, the effects will be found very pleasing, though often startling.



## PROCESS PROOFS.

THE Franklin Engraving Company, of Chicago, have an excellent exhibit of half-tone at the Atlanta Exposition.

Bolton & Strong, of San Francisco, publish a catalogue showing that fine process engraving is now done on the Pacific coast.

The Kidder Press Company, of Boston, send some four-color work, printed on the Web press. The key plate is a half-tone, printed in brown. The other colors are yellow, red and blue. Being printed so rapidly after one another successfully, it would indicate that color printing will be done ultimately entirely on a Web press.

The Engraver and Printer, of Boston, is now the property of its editor, Mr. Albert G. Glover. He deserves the good wishes of all interested in the "art preservative."

The Binner Engraving Company issue another collection of adver-

tising designs, printed in several colors, with the explanatory title, "More Creations."

It is gratifying to see that Mr. Bradley, the designer, is abandoning what the Inland Printer terms "the grotesque spinal-meningitis style of art."

The Chicago Photo-Engraving Company issue a handsome souvenir in the shape of artistic monthly calendars.

We blushingly acknowledge the high compliment paid this department by our foreign contemporaries, who quote from us so liberally and usually with credit. The Printing Times and Lithographer, of London, for instance, gives their readers all their process information under the department heading, "Notes from Anthony's Photographic BULLETIN."

The best edited exchange received is Process Work, Penrose & Company's monthly circular for workers in all photo-mechanical processes. These publishers meet with success because they deserve it.

The Babcock Printing Press Manufacturing Company furnish an admirable catalogue of their Optimus Press, which reflects the artistic skill of the South Publishing Company, of New York, who designed and printed it.

"One rule must be borne in mind," says Mr. Oscar E. Binner in *Paper and Press*, "and it cannot be too forcibly emphasized: Never vignette a half-tone, unless it will improve the engraving or the subject."

Mr. Max Levy says that in half-tone work, when everything is working harmoniously, he should not be surprised to see an operator lose from two to four days before getting a thoroughly satisfactory result, simply from changing the screen.

## PROCESS POINTERS.

John Stock is indeed a veteran. His first patent for a plate-holder was granted him on December 1, 1857, and his latest on July 30, 1895. Thirty-eight years of endeavor to improve the camera.

When cuts are returned from the electrotyper, do not trust their cleaning of the wax and plumbago from between the lines. These substances become so hard in time that it is almost impossible to remove them. Clean cuts with hot lye and a stiff brush.

In ordering a Dallmeyer, Goerz or other lens for process work, specify that you want to use Waterhouse stops, as many of the new lenses have iris diaphragms.

The Cosmopolitan Magazine and the Illustrated American have their own photo-engraving plants. This seems to be the tendency on the part of illustrated periodicals. Munsey's Magazine is also contemplating doing their own work.

ELECTROTYPES of half-tones used on large editions are now nickel-faced to withstand the wear of long printing.

A very little glycerine added to proofing ink will prevent the excessive tackiness that is shown when it has a tendency to pull off the coating from the paper in proofing cuts with much solid black.

Here is a proof of the value of illustrations in a newspaper: The London *Evening News and Post* was the first evening paper in that city to put in a photo-engraving plant to do their own work. In twelve months their circulation was increased from 10,000 to 160,000 copies.

Printing from aluminium is successfully done in New York. A sheet of this new metal, only No. 45 gauge in thickness, is stretched around a cylinder and printed at a speed of 2,000 per hour. It will work a revolution in the lithographic trade on large and cheap work.

#### HALF-TONE FINISHING.



The Flat Etching.

HEREWITH are two interesting exhibits of upto-date half-tone finishing from the pioneer photo-engraving establishment, the Moss Engraving Company. They show how much effect is now obtained by artistic etching, which was heretofore left to the printer to get by overlaying. The flat-looking print gives the state of the plate when etched evenly over its whole surface. The other shows how the same plate can be improved by judicious local etching. This is effected by painting the chloride of iron etching fluid, thickened with a little

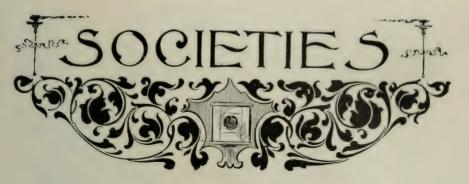
gum arabic, on the high lights with a camel's-hair brush, and allowing it to remain for varying lengths of time depending on the fineness

of dot required. The shadows are increased by burnishing, and the whole would not be possible but for the use of the enamel coating, which clings so tenaciously to the copper, and permits proofing, reetching, and burnishing even, without injury.

Messrs. E. & H. T. Anthony & Co. will shortly publish a complete work on the various photo-mechanical methods with particular reference to color work. The book is the result of some fifteen years' experience, by Mr. Macfarlane Anderson.



Result After Re-Etching.



George W. Gilson gives many valuable suggestions to secretaries of photographic societies in "The International Annual." Among others we find: "Introduce a beginners' or juniors' class night; have a one-man exhibition monthly; nights set apart for friendly competition in lantern slides are instructing and spur on to better work. Build up a good library, take the journals, and have them bound up for reference. Make a feature of the annual club exhibition, and don't sneer at the humble but earnest efforts of the young members. Join the lantern-slide exchange, and have as many open nights as possible. Have a yearly club auction. Invite the professional demonstrators; the little advertising they get is more than offset by the information they impart.

THE Mystic Camera Club's contribution to the New England Lantern-Slide Exchange is a series of slides illustrating "Boston's Park System." A special outing was held for the purpose of securing the necessary negatives. The subject is, indeed, a well-chosen one, having a definite purpose, and the idea might, we think, be followed with advantage by other clubs.

The Mystic Camera Club will act as secretary of the Exchange for the coming season, Mr. Will C. Eddy, of 3 Grove street, Medford, Mass., taking the active part.

DEPARTMENT OF PHOTOGRAPHY OF THE BROOKLYN INSTITUTE.—The first monthly meeting of the Department was held on October 25th at the Association Hall. The lecturer of the evening, Mr. Frederick E. Ives, of Philadelphia, delivered a lecture on "Color Photography," explaining and demonstrating the wonderful advances made in that branch of photographic science. The speaker exhibited a number lantern slides, made by his process, which were exceedingly good. After the lecture the audience was invited to examine the photo-chromoscope, the instrument show-

ing the pictures in all their natural colors.

On November 1st the fifth weekly meeting was called to order at the rooms of the Club. Mr. E. B. Miller, of New York, exhibited a large number of very beautiful views of the Ramapo Valley and the surrounding country.

The first conference on "How to Make a Photograph" was opened by Dr. L. E. Meeker, the curator of the Department, with the subject, "The Camera; or, What We Would Buy if Purchasing Again." A large number of cameras were shown and their good qualities explained by the various members. The doctor stated that the original detective camera was made by a Brooklyn man, and that Mr. Hetherington and Mr. Tisdell, both of whom have made so many improvements in magazine cameras, were both members of the Department. After all the cameras had been exhibited a number of questions were asked of the doctor, all of which were answered to the satisfaction and instruction of the audience, who were then invited to inspect the dark and enlarging rooms, and were unanimous in their decision that the Department had all the facilities for first-class work.

The second monthly meeting was held at the Art Rooms on Montague street, on November 15th, the lecturer being Mr. D. L. Elmendorf, of New York, who spoke to the Department on "Tele-Photo-Lens Photography," the lecture being illustrated with a large number of beautifully colored slides made from negatives taken by the lecturer in various parts of Europe. The lecture was much enjoyed by all present, and the wonderful capabilities of the tele-photo lens much commented on.

#### THE INTERNATIONAL ANNUAL.

A S announced in the November issue, "The International Annual," Vol. VIII, for the year 1896 has been issued. We are gratified to be able to record a phenomenal success as regards sales; the latter, perhaps, may be considered a test of the merits of the book. At the time of this writing three-fourths of the entire edition has been disposed of, and general indications point to a speedy sale of the balance.

The frontispiece is an exquisite Aristo-Platino print, 5 x 7 inches in size, and in all there are some one hundred and thirty photo-engravings throughout the text, all of them having some definite bearing upon the subject-matter of the text, and all being really useful as lessons in selection and general arrangement of subject.

The articles are above the usual standard, which is saying a great deal, and touch on matters of vital interest to both amateur and professional photographers. E. K. Hough writes on "Artificial Light in Photographic Portraiture," and the drift of this article is indicated by the following sentence: "Now it seems to me that negative-making by artificial light is coming forward to take the place of daylight in about the same slow but steady and relentless way which will surely conquer in the end." R. E. M. Bain contributes a delightful article on "Home Photography," with an excellent illustration entitled "Playing School," and winds up his article with "Try home photography, and it will prove to be far more attractive than that of the summer outing." W. Cooper's article, "How to Succeed With the Hand Camera," is timely and very useful. A. D. Guthrie writes on "Special Work for the Hand Camera," and advises specializing. Ottomar Jarecki contributes an article on the fascinating subject, "Sunset Photography." H. O. Warner's article, "Figures in Landscapes," may be read with considerable profit by prospective exhibitors. C. H. Cox writes on "Historical Photography," and maps out work for a party of four on a photographic trip. Those interested in the discussions on "Speed Determinations," in which Messrs. Hurter & Driffield have played so important a part, will find W. K. Burton's contribution of considerable value. As a relief from the scientific side of the subject, the burlesque entitled, "Initiation Night at the Upto-Date Camera Club," by John J. Woolnough, will be turned to with pleasure. We quote part of the President's exhortation to a candidate, which will give some idea of the general drift of the burlesque:

"If there's a weakness we deplore It's using stop f/64.
That mass of sharpness everywhere Is really more than we can bear.
Every plate that you possess,
'Back' it; never mind the mess.
Let your prints discard all trace
Of a burnished, brazen face.
When the promised picture's done,
When it's in its little frame,
Oh, be careful how you name;
Don't fall back on some threadbare phrase
Like that old chestnut, 'Summer Days';
For if you do, then bear in mind
You'll reprimanded be,—and fined."

Chapman Jones discusses "Changes in Platinum Prints"; Harold Holcroft writes on "Natural Skies in the Negative"; George Kilburn treats of "Stereoscopic Work," and Matthew Surface contributes an excellent article on "Photography and Mountain Climbing," this article being illustrated with five photo-engravings. Abraham Bogardus, who always has the right word to say in the right place, takes as his subject the word "Dry." In all there are more than one hundred articles, and all are on topical subjects by practical men.

The illustrations are exceedingly fine and include "Maurine," by George H. Hastings; four superb studies by Baker's Art Gallery, entitled "Critics," "The Rehearsal," "Rock of Ages" and "Charlotte Corday"; "Trilby Critics," by M. B.

Parkinson, an excellent group; Landy is represented by an exceedingly pretty study entitled, "Sweetness"; Davis & Sanford have a picture entitled, "What Shall I Say?" and C. F. Zabriskie is represented by four landscape studies, showing the country around Cooperstown; Rockwood's "Fisher Maiden" will attract attention, and the "Spartan Girl," a study by C. R. Dodge, shows what an amateur photographer can do; R. E. M. Bain's "Street in Native District, Cairo," is exceedingly interesting, showing the general structure of the buildings, the narrowness of the streets, costumes of the natives, and all that makes Oriental life fascinating to the Westerner; D. L. Elmendorf has four excellent pictures, and A. C. Angerer contributes a page of illustrations showing the different effects obtainable when screens of varying degrees of fineness are employed.

"The Annual" is indeed a book for both professional and amateur photographers, and this fact is being appreciated to such an extent that we would urge our readers to apply to their dealers for a copy at once, lest the entire edition may be

sold before a copy is secured.

# OLMSTED'S LANTERN-SLIDE MAT.

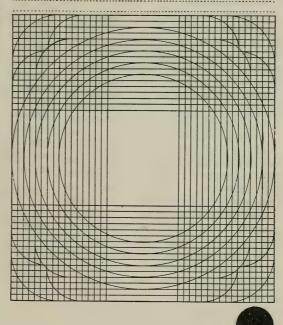
OF peculiar interest at this time of the year is a new lantern-slide

O mat designed by Mr. Olmsted, of the Syracuse Camera Club. It possesses the great advantage of yielding any size and style of opening, and such opening may readily be cut with the aid of a penknife.

The accompanying illustration gives a good idea of the mat, and it will be noticed that, not only can square, oblong and circular openings be obtained, but the familiar round-cornered opening is easily produced. It is without doubt the most complete and perfect mat that we have yet seen.

We commend it to our readers, and understand

TITLE



that the price is only 75 cents per hundred.

A NEW use for formalin has been discovered. The process consists in treating gelatine films which have been rendered insoluble by means of formic aldehyde with a solution of a ferric salt. On exposure to light under a negative, the ferric salt is reduced to the ferrous state, and the oxygen disengaged in the process is transferred to the formic aldehyde, converting it into formic acid, with the result that, where this oxidation of the aldehyde has taken place, the gelatine film is rendered soluble again. By this means, therefore, a positive image is obtained from a positive on development by washing.—*Process Work*.

#### OBITUARY.

J. TRAILL TAYLOR.

DEATH has of late been making great inroads into the ranks of photographers, and many whose names have been familiar to us, the younger element in photography, and whose work has lifted us on to a higher plane, have left us with a legacy of priceless value. Gurney, Forshew, Fredricks, Hesler and Roche have gone, and now, stricken suddenly, the veteran photo-journalist, J. Traill Taylor, editor of the *British Journal of Photography*, and at one time editor of *The Photographic Times*, has joined them. It is but a few weeks ago that Mr. Taylor called on us, and chatted pleasantly on the many novelties in photography that we were able to show him. He left us for a short sojourn in Florida, where he owned much real estate, promising to see us again before leaving for England. His name will live as long as photography is practiced. We extend heartfelt sympathy to his family.

### NEW BOOKS.

Photograms of 1895, published by The Photogram Limited, and compiled by the editors and staff of The Photogram, is an ambitious effort, which, we trust, will be repeated. Gleeson White contributes an extremely interesting article. but the bulk of the book is devoted to an illustrated description of the two London exhibitions, the Photographic Salon and that of the Royal Photographic Society. " Pictorial Photography in the United States," is the subject of a short article by Alfred Stieglitz, who goes out of his way to disparage American exhibitions. We trust that, at the convention to be held next year at Chautauqua, Mr. Stieglitz will be well represented by "photographs as they should be," and that he will present a paper that will convince the professional photographers of the United States that he, and not they, know what they want, and how such a result can be obtained. It is a matter of regret that Mr. Stieglitz and others send all their work abroad, and do not possess sufficient patriotism to devote their efforts to the enlightenment of their fellow countrymen.

W. K. Burton writes in his usual interesting manner on "Progress in Japan," and New Zealand and India are represented by able contributors.

The half-tone work is excellent, and the presswork is a credit to Allen & Carruthers, of London.

The American Annual of Photography and Photographic Times Almanac, edited by Walter E. Woodbury,

published by The Scovill & Adams Company of New York. This is an excellent annual, containing some sixty articles that will be found useful to all photographers. The illustrations are a special feature, and while many of them are not above criticism, they will serve as admirable studies for the amateur. The pictures by Alfred Clements are especially good. We cannot say the same of "The Queen of Sheba," a hard picture, lacking in grace, and apparently without object. The book is admirably printed, and should find a ready sale. Price, 75 cents.

Burton's Manual of Photography, by W. K. Burton, C. E. Published by Percy Lund & Co., Limited. A practical guide in the technical part of photography for those who take up the camera for the first time. The book is splendidly printed, and is of shape convenient for the pocket.

The A B C of Retouching, by Andrew Young. Published by Percy Lund & Co., Limited. Another pocket instruction book, dealing with the retouching of portraits and landscapes. A thoroughly practical treatise.

EINLEITUNG IN DIE NEGATIV-VERFAHREN UND DIE DAGUERREOTYPE, TALBOTYPIE UND NIEPCEOTYPE, by Dr. Josef Maria Eder. A valuable contribution to photographic literature. It is a matter for regret that so valuable a work is not translated for general use. Published by Wilhelm Knapp, Halle a/S. Germany.















